Mapping Gaming Infrastructures

Graham Candy

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ABSTRACT

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This thesis works through a series of arguments emphasizing the ways in which gaming practices are shaped by unique intersections of gamers' desires, game designs and material infrastructures. This work consists of three main parts. First, I argue that by viewing online games as *sites of contrived contingency* we can better understand why diverse social forms have so quickly developed in online gaming environments. Secondly, I suggest a new method to approach studying these technosocial environments through developing what I call *ethnography of gaming infrastructure.* Lastly, through focusing on one technological artefact – ping, I equip my ethnography of gaming infrastructure to demonstrate how uniquely game related manifestations of technology are re-mapping the geographies of both local and global social forms.

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Glossary of Terms

Counter-Strike (abbr. CS): A popular first-person shooter game released in 1999. Originally developed as a **mod** based on the game *Half-Life.*

Game Server (abbr. server): A game server is a piece of hardware (usually a computer) that controls communication between clients at a remote location. Clients (other gamers) connect to the game server in order to play the game with one another.

First-person Shooter (abbr. FPS): A genre of game where the player experiences the game from a first-person perspective. Normally involves the use of a variety of guns to shoot enemies and achieve various objectives.

Lag: The effect felt within the client side of the game when latency is too high, or loss of packets (data packets) occurs. This effect often comes in the form of delayed server response and game play becoming less fluid than normal.

Latency: See **Ping**.

Modification (abbr. mod): A mod describes a number of modifications that are made to an existing game to produce a new gaming experience. The changes can range from small additions like new weapons or sounds to a complete overhaul of the game.

Ping: The time taken for data to get sent from the server, to the client and back to the server, normally measured in milliseconds.

Public Server (abbr. pub): An open access **game server** where individuals come to play a given game. Those who play on this kind of server are often referred to as **pubbers** in comparison to those who are more involved in competitive gaming.

Massive Multiplayer Online Game (abbr. MMO): Any game environment that contains hundreds to thousands of players on a given game world or server.

Voice over Internet Protocol (abbr. VoIP): The transmission technologies that allow for voice communications over the Internet.

World of Warcraft (abbr. WoW): A popular Massive Multiplayer Online game released in 2004.

Introduction

On December 26th 2006 I was in my small dorm room in the Northern Chinese port city of Dalian, packing my bags for a trip to South Africa. I was travelling to visit my girlfriend who had been working there for the previous four months. That evening I was walking around the room gathering my things, my girlfriend's voice coming clearly through the speakers. The use of voice over Internet Protocol (VoIP) software like Skype had been crucial for us to talk to one another without being punished with high priced phone bills that neither of us could afford as recent university graduates. Suddenly, Skype cut out. I assumed, like normal, that it was a problem on her side. In order to talk to me she had been going to a restaurant nearby her apartment where there was free wireless, arriving there night after night buying a single Coke or occasionally splurging on a small pizza. The wireless at the restaurant would often stop working; however, it was still far cheaper than the fees the telephone company wanted to charge to install an Internet connection in her apartment.

This time it seemed like the Internet had cut out for good. After I was unable to get a hold of her for thirty minutes I assumed that she had given up and gone home for the night. As a way to close the evening conversation I decided to log onto my Google Mail (Gmail) so I could send her a good night message that she would see in the morning. I could not log into Gmail. Frustrated, I began to wonder if it was a problem on my end. My immediate thought was that the ephemeral 'Internet censors' were flexing their draconian muscles again. During my time in China I had experienced the on and off blockage of sites like Google. I decided to log into Hotmail, my secondary email account. Hotmail was working but it was so slow that it was essentially useless. "They

blocked Hotmail too?" I thought, confused. Hotmail's connection had never been affected while I was in China. "Have they cut off all connections to the outside world?" I thought with a bit of panic and excitement. I tried Yahoo.com, my favourite hockey website and a few others. I was unable to connect to any of them. It had seemed my suspicions had been confirmed. Finally, as a last resort, I decided to check the Baidu.cn homepage, a Chinese search engine similar to Google. The page loaded in a fraction of a second like it normally did. I clicked on the main news page, searching for any tidbits of information about what was going on with the Internet. The top story addressed the situation. It was not the Internet censors this time; it was an earthquake. "An earthquake," I thought with confusion, "what does this have to do with me not being able to connect to Gmail?"

the oceans are lined with metallic veins

In December 1996 an article was published in *Wired* magazine by Neal Stephenson, a well known science fiction writer. The article was titled *Mother Board Mother Earth* and chronicled a journey by the author as a self-declared "hacker tourist ventur[ing] forth across the wide and wondrous meatspace[1] of three continents" (Stephenson 1996). In his exploration Stephenson traces the complex geo-political-economic history of how the world was covered with submarine cables, the veins that transmit the communication data of billions of human beings across the globe. In highlighting the rich histories of communication technologies, Stephenson begins at the site of 19th century equatorial rubber plantations on the Malay Peninsula that formerly harvested the rubber needed to encase submarine cables and ends in contemporary Cornwall, England, interviewing

[1] A term used by Stephenson as a means to contrast the physical world to 'cyberspace.'

surveyors who use complex data processing and sonar technologies to digitally map the sea floor, finding the exact locations of where to lay new undersea cables.

The specific communication line that Stephenson was investigating is called the Fiber-optic Link Around the Globe (FLAG) cable (Figure 1), which is one inch in diameter and 28,000 km long. It was this cable, one of nine major underwater telecommunication cables near Taiwan (Lipatov 2009), which was severely damaged during the Hengchun earthquake on December 26th 2006 and abruptly ended my VoIP conversation with my girlfriend. The earthquake had struck 23km off the southern coast of Taiwan in the Luzon Strait. In southern Taiwan homes collapsed, buildings caught fire and power disconnected for 3000 homes. On the bottom of the ocean another sort of infrastructural damage had occurred. The thin, one-inch FLAG cable had snapped

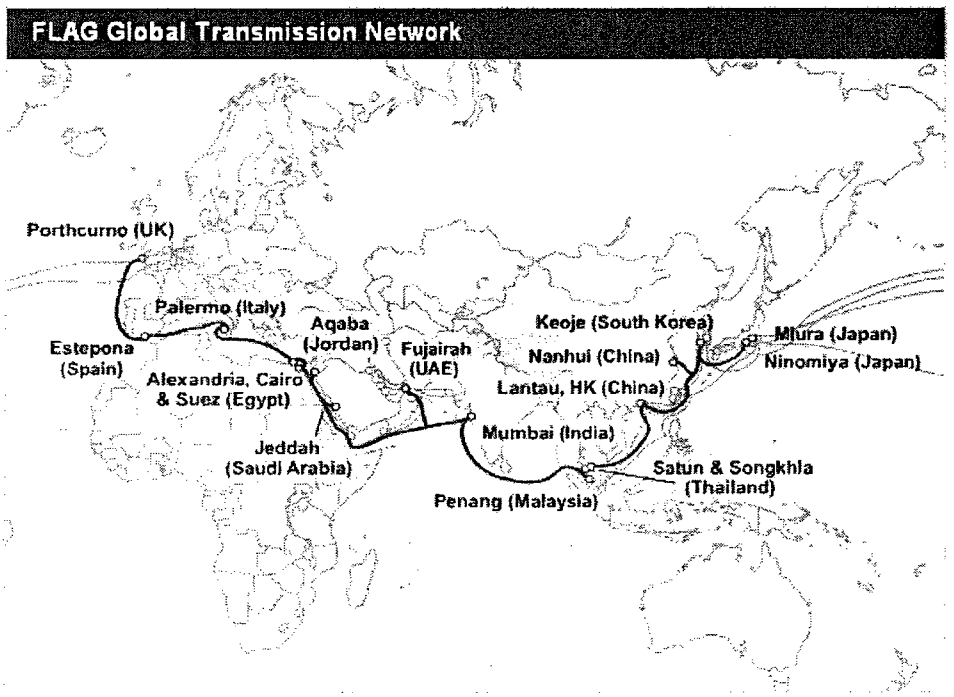

Figure 1. The FLAG cable and its landing points (Lauriault 2008)

and in its breaking nearly all Internet connection from China to the rest of the world was severed. Stock markets were suspended as the international flow of capital in and out of China ground to a temporary halt. Until the cable was repaired hundreds of thousands of gigabytes of data a minute was forcibly re-routed into older, slower cables that were ill-equipped to handle the contemporary data flow moving in and out of terrestrial China.

The importance of this one underwater cable is indicative of the complex layers of infrastructure that people depend on to conduct their daily lives. From driving to work, buying food at the grocery store or logging onto your e-mail account, all of these acts depend on hugely complex, interconnected technological structures weaving through the local to the global.

For hundreds of millions of individuals the breakage of the FLAG cable also meant a disruption to everyday activities such as online gaming. And just like other daily practices such as checking e-mail accounts, for the most part those who play online games go about playing, socializing, working and carrying out productive acts in digital spaces without giving much thought to the networks which sustain their diverse activities. Often it is only when problems arise, such as when the Internet connection lags, a game server crashes, your VoIP software cuts out or, as it may happen, an earthquake severs the Internet connection for half a billion Internet users, does the power of technological infrastructures come to the fore. It is at this junction, where online gaming and infrastructure meet, that will be the focus of my thesis work.

embedded infrastructures and buried assumptions

The Hengchuan earthquake did more than shake the FLAG cable loose from the sediment of the sea floor; it also set in motion the waves that could be harnessed to dislodge

stagnant academic constructs of online social networks from their conceptual moorings. This natural event, seemingly unrelated to online activities such as gaming, has made it clear that if we are to become conversant with emerging social structures in online environments we must integrate a more in-depth understanding of the material context in which they are embedded. This is the purpose of my thesis work: to reconceptualize the current tool kit used to analyze games in order to reshape our understandings of how the matrix of individual desires, digital game designs and complex material infrastructures mediate nascent social forms.

The study of video games does not necessarily arise because of their newness as a technosocial form. Online games have their own material and social history now stretching back more than half a century, with the cultural roots of gaming as long and deep as the human experience (cf. Huzinga 1938). My outlook on online games arises from my foundations in anthropology, a discipline deeply interested in understanding social relations in their manifest and diverse forms. It is this tradition that must now wrestle with the ways in which rapidly arising digital technologies have become crucial contexts in mediating human social relations. The study of online games in this paper is then a part of what I hope is a growing attempt in anthropology to better understand what Francesca Bray describes as the "transformative role and destabilizing potential of technology in emergent configurations of oikos[2]" (2007:38).

This thesis focuses on two significant challenges that must be addressed and negotiated in order to understand how online games are both destabilizing and transforming social forms. The first of these challenges is setting out a general definition of what consists of a 'gaming environment.' Given that the problematic and simple

[2] Human communities.

association of 'games' with 'play[3]' has been thoroughly deconstructed in game studies (Malaby 2007; Taylor 2006; Galloway 2006; Dibbell 2006) we are left with a sort of ontological void. In order to fill this space this thesis both utilizes and challenges Malaby's (2007) definition of games as "semibounded and socially legitimate domain[s] of contrived contingency" (Malaby 2007: 96). Thus, the first section of this thesis explores the relevance of this definition and asks if online games can indeed be defined in this way and asks what this means for networked social forms as online games become a practice of everyday life?

Similarly, the second challenge also regards defining and exploring the impact of technologies such as online games. As many academics have noted there is a tendency for social scientific studies to either essentialize the role of technology in shaping human social relations or do the opposite and strip material technologies of all agency (Malaby 2007; Giddings 2006; Hand and Sandywell 2002; Bray 2007). While academic investigations tread heavily on these paths, this thesis is marking off a third direction in which to situate games as technologies in social life. Crucially, the second part of this thesis asks how we are to identify the salient technological and relevant social structures which will allow us to understand the impact from the explosive growth of online gaming.

the arguments

To make the conceptual journey from infrastructures like the FLAG cable to the complex social forms that have arisen in online games means transversing multiple technological and social layers, pausing on certain objects that may help us more clearly piece together

[3] I use verb 'play' in this thesis for the sake of fluidity and convenience, understanding the term to comprise a wide variety of productive acts that occur in online games.

this contemporary mix of the social and material. I begin by utilizing Malaby's (2007) reconceptualization of games as semi-bounded spaces of contrived contingency. By building on Malaby's viewpoint I am able to utilize Jackson's (2009) analysis of the dialectic between contingent experiences and *understanding* of others to explain how complex social forms have so rapidly developed and transformed in digital environments. I argue that these transformations gain momentum through the ways in which these structured but contingent digital environments place individuals into processes of continual reflexivity and co-operation in the context of online games. I conclude by proposing that these loops of intersubjective experiences of contrived contingency are the basis for the emergence of networked sociality as an everyday practice.

Challenging essentializing studies of gaming technologies I build directly on the work of Taylor (2006b) in theoretically orienting my studies to view online games as part of larger, processual technosocial assemblages. In her analysis Taylor (2006b) suggests methodological work in this area should focus on how particular elements of the gaming assemblage relate to specific human-machinic configurations. In this thesis, having ontologically situated online games as semi-structured spaces of contingent and processual sociality, I turn my attention to asking what does a thorough methodology centered on a lengthy analysis of discrete technosocial objects, purposefully identified, tell us about the consequences and forms of human sociality in online games? In thinking about technological artefacts in games I argue that the deconstruction of the dichotomous work/play definition of gaming environments opens up the potential to draw on anthropological methodologies developed in the ethnography of work. In particular, I will be building on and modifying the work of Star (1999; 2002) on the relationships

between technological infrastructures and human social organization. In examining these relationships I develop what I call *ethnography of gaming infrastructure.*

I argue that this proposed ethnography of gaming infrastructure is best utilised with a focus on *disjuncture.* I contend that focusing on disjuncture, that is, moments of breakage or rupture with normal practices, we are able to identify salient infrastructural elements in the gaming assemblage, elements which are crucial to understanding both current and future networked social forms. In order to demonstrate the efficacy of my proposed methodology, I draw on an example of *World of Warcraft* gamers[4] from Australia and highlight the powerful relationship between *physical infrastructures* and the *structures of online sociality.*

Finally, applying the ethnography of gaming infrastructure developed in part two, I trace out an ethnographic account of the various threads that weave together one configuration of the human-infrastructural tapestry of gaming. In studying the game *Counter-Strike* (CS), I follow the impact and influence of latency in shaping modes of digital sociality. I examine the ways in which infrastructures become *physically mediated* in actual moments of gaming. I argue that this unique collusion of the human and machine in interaction with latency forces us to cartographically revisualize our understanding of contemporary social relations. These nuanced ways of viewing networked sociality present a deep challenge to both essentialist and reductionist views of the ways gaming technologies remap human socialization.

[4] I use the colloquial term 'gamer' or 'gamers' to refer to individuals or groups of individuals, respectively, who engage with online games.

Everyday Gaming

I met Matt on a public server. I am pretty sure I met Matt on a public server[5]? Anyway, I am fairly confident that the first time I met Matt it was on a public server called DIEW, Death in Every Way. I had been playing Counter-Strike (CS), a popular first-person shooter game, for about two years before I met Matt. I had just finished an uneventful six months of military service with the Canadian army at the end of which I decided against extending my contract. My army days were over.

I had $6000 (CDN) in the bank saved up from the summer in service. 'Saved' isn't the best word. I didn't really have much of an opportunity to spend the money in the first place. After a month of boot camp, I remember being prepared to blow as much money as I could the first weekend they let us 'out on the town.' My memories of the night: being at a bar, seeing my Master Corporal laughing, buying a pitcher, smoking a cigarette outside, waking up at home in the morning. I had spent around $40 including the blacked out taxi ride home. The remaining time in the army continued like that. I would spend all week at the army base then have a day off where I would get drunk from four beers and I would wake up the next day having spent a fraction of the week's earnings. It was in this way that I had 'saved' $6000 in the bank when I started university.

But back to Matt. It was less than a month since I was discharged and I had exchanged my real gun for a virtual one, and I was wisely spending my saved income on a growing tolerance for beer. I was having a very, I mean a very good day of CS when I met Matt. I had been using a sniper rifle and everything was working as well as one would want a sniper rifle to work. I remember that we were playing a map called

[5] A public server refers to a game server that is 'open' to public gamers, meaning that it has no password or other mechanism to keep particular individuals out.

cs_italy[6] *and I had an incredibly high score, the kind of score where people start accusing you of cheating. I was hitting every single shot I took: I was in the zone.*

At the same time, my memory is uncertain. I simply remember using a sniper rifle and having a good time and for some reason when that memory arises I think, 'Matt.' The next time I can recall an image of Matt is playing in a proper match[7] *with him on another map called de_train, probably months or even a year after I first met him. I remember being nervous and thinking how foolish and yet natural it felt to be nauseous from playing a video game. I suspect I did poorly that night but that is a pretty easy assumption since I did badly most of the time.*

By the time we played in that match we were also in a clan together called Wardogs. Looking back we were an eclectic group but at the time it seemed normal. The co-leaders were Matt and Stephen. Matt was around 16 years old, as was Stephen. There was also Tony, probably 15 at time living somewhere in NY as far as I knew. They were all in high school. The one other member was called John. He was 20-something and in the Marines in North Carolina. He fixed helicopters.

It still seems strange to me how little we learned about one another's lives despite the 20 plus hours a week we spent together. Playing together wasn't about learning to like someone because of discussions around what you had in common with one another. It was about learning about them from their actions. Looking back now it feels to me like the game itself was an endless series of tests answering a battery of questions: were you selfish or a team player? How did you handle pressure when everyone was relying on

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[6] A server normally has a rotation of 'maps' that change over the course of the day. A map is basically a level that defines the physical gaming environment. This particular map was modeled after an 'Italian' town.

[7] A match is when two teams play a competitive game in a sanctioned gaming league.

you? Did you stay up late at night chatting in bed until you passed out or log out as soon as the game was over?

That was 2001. I have no definitive recollection of Matt after that match for years despite the many hundreds of hours I must have played with him. It seems terrible to say but at the same time it doesn't feel unnatural. The fact that the relationship remained solely within the confines of online networks for years made the potential to forget the day-to-day playing so much easier. This is no doubt related to the context in which we played and talked.

When you play the average online game the context is always limited, more or less. Over and over and over again you play the same map like you would if you were playing a game of chess, the board never changes just the actions. For a person to remember a particular game out of thousands played it has to be exceptional. I was an unexceptional gamer in an unexceptional clan. I have unexceptional memories which is another way to say, very few of them.

Here's another way of putting it: online friends are built of a thousand little stones, real life friends are built of boulders. They are harder to get in place and difficult to push away, that is, unless an explosive goes off. It is probably for this reason that even after having played CS with Matt for 8 years, killing probably tens of thousands of online opponents with him and having talked about our lives many infinite amount of times, that my strongest memories of him are all from the two days I spent with him a year ago, in person, in Rochester, New York. I won't recount those days. Like playing together online there was nothing exceptional about our time together. Even the confirmation of

him being a great guy was not exceptional, I knew he would be. I had learned that years before, online.

I wish there was a poignant way to end this. There isn't. At the same time I think it's fitting. There is nothing exceptional about my memories of Matt and I. Our friendship is mundane and I mean it in the most beautiful sense of the word. It is the sort of everyday friendship where you can not talk for weeks and it will change nothing or if I phone him in a panic he will put aside his work to help me. It is in this very mundaneness which makes our friendship, well, exceptional. I think I met Matt on a map called cs_italy but then again I may not have. I think that we played a match on de_train but I could have imagined that. All I know is that I met Matt when I was a foolish 19-year-old straight out of the army and starting university and he was a high school student somewhere else in the world. We met shooting other people on the Internet and making jokes about turkeys. Today Matt helped me design the invitation for my wedding.

I will not be sending a wedding invitation to anyone with whom I learned how to shoot real guns, spent many freezing days together being yelled at, or got drunk with.

I will be sending an invitation to Matt.

- Personal Journal December 2009

searching for a foundation

The rapid integration of online games into the human experience is exceptional. However, this exceptionality draws not from revolutionizing life, that is, by removing us from the trivial experiences of day-to-day life. Instead it is exceptional through the way online games have become *a part* of the mundane. Indeed, online games are now a part of the repetition of the daily, of those cycles of the everyday (Lefevbre 1961 [2002]) that

are still so often ignored in examinations of contemporary society - things like our commute to work, our evenings, weekends and breaks; or for tens of thousands, our occupation itself. Understanding elements of the mundane is about exploring how these elements both reflect and challenge broader social and political structures and changes. A salient part of this exploration of the everyday must be rooted in a search for the 'nature' of those daily acts. I contend that there will always remain value in this kind of searching for the 'nature of things', and while we may never come to complete agreement about what the key 'truths' or 'elements' are about a given item, thing or object, it is the process of exploration itself that informs new ways of understanding the world. In the case of this explorative thesis, I begin my inquiry into the 'nature' of games in order to explain some of the incredible ways in which human sociality, that is, the practice of everyday intersubjectivity, has been rapidly drawn to, and shaped by, online games.

I start this journey by building on the work of Thomas Malaby (2007). One of Malaby's central ideas is that online games are not spaces apart from daily life, but are instead "semibounded and socially legitimate domain[s] of contrived contingency" (Malaby 2007: 96). Focusing on this idea of 'contingency' allows us to draw on the work of another scholar, Michael D. Jackson (2009), who argues for a fundamental connection between *contingency in social contexts* and *the construction of trust and understanding.* I argue that viewing contingency as the base element in online gaming environments allows us to see how complex and varied social relationships can rapidly develop. Furthermore, by seeing online sociality as the norm, as an increasingly *everyday practice* and as *mundane*, prepares us to examine the questions pursued in the rest of this thesis: how do particular aspects of technological infrastructures intersect with existing and

emerging social conventions to shape the present and future of online sociality? I begin by defining what a 'game' is, the starting point for the key question posed above.

the problem with game studies

When people talk about the nature of games it is one that they normally associate with 'play,' that is, in opposition to 'work' or 'production' (Malaby 2007). This conceptualization has become known as the 'magic circle' argument, which takes games and sets them apart from daily life and thereby as outside of the 'real' world where meaningful activities like politics, labour and love take place. Malaby describes these arguments as a type of exceptionalism[8], in that they argue for strict divisions between certain categories like the virtual versus the real or play as contrasted to work. Recently, Malaby notes, these categorical distinctions have been challenged in general ethnographic work (Lancy 1980; Malaby 2003; Ortner 1999; Stevens 1980) as well as in a growing body of studies on the variety of important social, political and economic stakes present in online games (Castranova 2005; Lastowka and Hunter 2003; Burke 2002; Taylor 2006, 2009; Silverman and Simon 2009). Reviewing this body of literature, Malaby concludes with the simple statement that "we cannot empirically sustain "play" as a label for a separable human activity" (Malaby 2007: 102).

By removing games from this old conceptual lattice, Malaby contends we will become free to pursue a new, empirically based study of games that "*situates them within daily experiences*" (2007: 102). In this framework games are now seen as part of complex configurations of human life across technological, political, social, and economic layers. As a better way to understand games and how to direct our intellectual

[8] Exceptionalism in this thesis refers to the defining of particular objects or acts within limited categorical terms. This ignores the potential for multiple readings of a given object or action.

investigations towards them, Malaby suggests that a fruitful place to begin is to look at other areas of human experience which share common aspects with what we normally classify as games. We do not have to look far, he says. If we think of the formal characteristics of the United States immigration lotteries or the casting of lots to determine who inherits a patriarch's agricultural holdings in Greece, we find crucial similarities with games (Malaby 2007). Malaby contends that while these social events may appear dramatically different from the kinds of games which we associate with being "safe, separable, and pleasurable" (2007: 98), they are, in fact, "all distinguished by their status as legitimate and contrived artefacts for the generation of unpredictable and interpretable outcomes" (2007: 98). He argues that it is better for us to situate play as a mode of human experience rather than as something which is only found in those things we have previously conceptually segmented off as 'games.' Malaby ends his analysis by suggesting that we should look at online games as sites of new social action where people can build trust and belonging (Malaby 2007: 109). He, however, leaves unanswered an adequate analysis of the connection between contingency and trust, to which I will turn to in this thesis.

What Malaby has ostensibly accomplished is to develop a new and powerful way of conceptualizing games within the human experience. However, in regards to his key suggestion that online games are sites of social contingency and places to build trust and belonging, his examples of casting lots in Greece and the immigration lottery in the United States raises the proverbial eyebrow of confusion. While these examples do show the power of contingency as a *mode of human experience*, they do little to show the links made in his final suggestion, that as sites of social contingency, online games are places

to build trust and belonging. In fact, his examples make quite the poor case of this. What aspects of an immigration lottery or the casting of lots to determine one's financial future help build a sense of trust and belonging? Furthermore, why has Malaby taken examples that are 'game-like' but then ignored his own argument to situate our understanding of contingency as a 'daily experience?' With this in mind, it is clear that we need to re-examine the possible connections between contingent sites of social action and notions of belonging. What factors are we missing? Is there a direct connection between contingency and trust in online games? The task now is to build the conceptual links between the contingency of games and the experiences of trust and belonging. An important part of the solution to this problematic task lies in the seemingly distant domain of contemporary philosophy, a discipline with issues of its own.

the problem of the everyday in contemporary philosophy

Just as Malaby (2007) critiques the exceptionalist theorizing found in game studies, Jackson (2009) believes that one of the major problems with contemporary philosophy is the use of historical referents as the most frequently used method for trying to understand the world. In practice this has meant that contemporary philosophers often draw on the thoughts of philosophers now long dead. At best, Jackson says, this practice can help us broadly describe the nature of human experience and at worst it can be completely disconnected and irrelevant to contemporary life. Like Malaby, who wants us to understand gaming as an everyday mode of experience, Jackson's answer to philosophy's problem is to similarly situate philosophy as a mode of human experience within the "*quotidian situations of others*" (2009: 236 emphasis added). This study of everyday life is what philosophers shy away from in their "separation of vita contemplative from the

vita active" (2009). When philosophers try to summarize ideas into broad truths about the human experience, argues Jackson, these ideas can only be sustained in the abstract. Much like abstract theories on the nature of games, many philosophical frameworks also quickly erode when they are exposed to the daily experiences of individuals which 'overflow' and 'confound' these models (2009).

To alleviate this seeming impasse between philosophy and life Jackson turns to, and builds on, the work of Hannah Arendt. Jackson believes that the key project in philosophy today is to build a new vocabulary, one which "captures the indeterminacy, instability, eventfulness, incoherence, quandaries, aporias and poetics of existence" (2009). Jackson then, like Malaby, then calls on us to build the links between contingency and notions of understanding and trust. However, the question still remains, how does one begin to look for a new vocabulary when the basis of one's argument is the shifting nature of social reality?

In order to demonstrate the ways in which contingency can inform a new vocabulary as well as shape social life Jackson suggests we take a look at the notion of *judgement*. Jackson draws on Arendt: "unlike pure reason, judging does not consist in a silent Platonic dialogue between me and myself" she says, "but springs from and anticipates the presence of others" (Arendt, 1968: 220 in Jackson 2009: 237). Thus judgment, Jackson argues (Jackson 2009: 237-238, emphasis in original):

> seeks distance through imaginative displacement – reconsidering one's own world from the standpoint of another ... [u]nlike classical empiricism, where the observer makes himself a *tabula rasa* in order to register his impressions of the observed, judging requires active engagement and conversation – allowing *one's own thoughts* to be influenced by the thoughts of others. Accordingly, judging implies a third

> position, reducible to neither one's own nor the other's: a view from in-between, from within the shared space of intersubjectivity itself

For Jackson the *act of judging is itself good* (Arendt 1968: 241 in Jackson 2009: 240):

> Judgment then is 'representative' not because one adopts, advocates or even empathises with the views of others, still less because one comes into possession of abstract knowledge that corresponds to some external reality, but simply because the understanding that informs one's judgement is pluralistic rather than monistic, intersubjective rather than subjective.

Furthermore, Jackson explains judgement as "a way of doing justice to the multiplex and ambiguous character of human reality by regarding others *not as inhuman, but as ourselves in other circumstances*" (2009: 241). Jackson suggests that if you want to look for situations that are ripe for 'imaginative displacement' and judgement we should look towards situations that "that wrench a person out of his or her habitual routines of thought and behaviour, rather than a product of philosophical choice or idle curiosity" (2009: 239). Jackson says that we find judgement and engagement with others in a variety of disruptive situations whether of psychological turmoil, moral confusion or those that involve us going beyond the borders of the local world. Jackson calls this the *migrant imagination*, the imagination invoked in sites of "*contingency, difference, and struggle*" (2009: 239 emphasis in original).

One of the examples that Jackson chooses to invoke as a situation where individuals go 'beyond the borders of the local world' is a context he is familiar with: the anthropologist out in the field. If we are to look for examples of situations where individuals are wrenched "out of his or her habitual routines of thought and behaviour" (2009: 239), then where better to look than at anthropologists themselves? Jackson argues that it is in ethnography which we:

> learn the languages of those who seem most distant and alien to us in the world in which we presently live, and by sojourning among them discover the meaning of the truth that Arendt and Jaspers set such store by – the truth not of abstract knowledge of the other but of communication with the other (2009: 241).

While the example of the anthropologist is an interesting, if perhaps hopeful view of how contingency builds judgement and knowledge of the other, the same problems that arise in Malaby's example find a home here. Jackson's example of the anthropologist is brought up to suggest that the anthropologist becomes viscerally familiar with contingency in their continual battle with trying to apply static theories of the world to processual, daily experiences. In this way Jackson achieves the goal of arguing that philosophy must be built from an appreciation of the contingency of the everyday. But if we are to continue to believe his argument that contingent experiences themselves, especially in dialogue with the other, are the building blocks for judgement, we are consequently guided by limited evidence that does not stretch beyond the anthropologist himself. How about those people whom the anthropologist is studying? What about those in the next village or city over? What about the millions of people who live their lives in relatively bounded geographic and social space? It is clear that Jackson's view of the anthropologist "sojourning among them" (Jackson 2009: 240) is an exceptionalist example in itself. However, in his exceptionalism, Jackson, through Arendt, has given us two major proposals: firstly, *it is in contingent situations with others that we build communication* and second, it is through this communication that we experience imaginative displacement, the foundation for judgement.

Jackson's and Malaby's examples have sought to demonstrate the power of contingency as a foundation for social relations, however their examples have fallen short

of their goal to situate trust and judgement as arising from any sort of quotidian reality. While the main point of Malaby's paper is to argue that games are an everyday experience of contingency, his ethnographic examples are more about demonstrating the similarity between games and other areas of life than about backing up his claim of the relationship between contingency and trust. Jackson, meanwhile, has given us a powerful argument about the relationship between being in contingent situations with others and building communication and judgement, but has similarly failed to give us an example set in the everyday.

I now proceed to take another look at the arguments proposed above in the context of online games, a site that Malaby proposed has significant possibilities, but failed to elaborate on. I begin by asking what, in my opinion, is a crucial contextualizing question: is there anything about online games that sets them apart from other forms of media or modes of contemporary human experience?

contingency of the everyday

Online games, while clearly a child born from a long genealogy of technologies and arts with its origins manifested in its materiality and content, are nonetheless inherently different than movies, books or television. One crucial difference is that these other forms can be described as text which are all uniquely interpreted by their consumers. Pop music, Hollywood/Bollywood/Nollywood movies and books like *Harry Potter* are all examples of these kinds of text which are increasingly globally consumed. A movie like *Crouching Tiger Hidden Dragon* or *Memoirs of a Geisha* will and have been interpreted very differently in different locales and by individuals within those locales.

Online games, of course, also have a representational layer to greater or lesser extents. Games such as the *Final Fantasy* series and *Half-Life* have rich and lengthy storylines and can also be perceived as text. On the other hand, games like *Tetris* have very limited representational layers. However, if we were to look at *Final Fantasy*, *Half-Life and Tetris* as a whole, we can easily recognize them all as games (Galloway 2006). The way in which we can identify them as a game is not based on the style of their stories or its contents, but the crucial fact that games depend on human action to occur for them to be acknowledged as such. Games *must be played,* otherwise they are nothing but a set of inactive algorithms and rules (Galloway 2006). Unlike movies, books and television, games require practical action, and often in the case of multi-player games, require to differing degrees, *coordinated social action.* In this way Galloway defines the nature of video games to be unique in that the product, or the final text, that is the game itself, must be enacted by an operator (2006: 2). For Galloway, what used to be a culture of looking (at the old mediums) is becoming more of a culture of doing, "the act" (2006: 3).

> There are two crucial points here, firstly that for games to be enacted there must be human action, but at the same time these human actions are heavily structured in interaction with machinic, algorithmically coded acts.

This 'act' in action-oriented culture is dependent on a fundamental 'property' of the game: the contingency of outcomes. This contingency or uncertainty (Salen and Zimmerman 2004) is a crucial component of everything that we come to regard and classify as a game. While the amount of structure in the form of algorithms on a macro and micro scale may change (such is the case with a game with a rich storyline such as Final Fantasy versus a game with a nonexistent storyline such as Tetris), there must always be uncertainty whether it is composed of skill, chance, risk (2004: 174) or any

other number of contingent forms. In single player games this contingency comes mostly in the form of coded structures with uncertain endings (win or lose, at which level, under what conditions and so on), while in multi-player games the contingency is increased dramatically with the introduction of other individuals, whom we can simultaneously classify as both agents and structures that impinge on the game and dictate, much like the game itself, the contingency of outcomes. These other gamers can be enemies, friends or simply observers, but their mere presence in the game alters its form.

Having established the argument for the contingent nature of games, a key question to ask is what is it about online games that make them different from the contingent environments, the anthropologist in the field or the immigration lottery, proposed by Malaby or Jackson? The first and foremost point is that for millions of people games are an everyday social experience rather than a one-off occurrence. The United States game industry alone now boasts $11.7 billion (US) in sales a year (Entertainment Software Association 2010). One of the fastest growing segments of this multi-billion dollar gaming industry is online gaming. The market has grown to the extent that one game in particular, *World of Warcraft*, claims a subscription base of over 11.5 million users (Cavalli 2008). While these numbers are impressive on their own, they merely trace the growth and interest in online games; however they still require an explanation as to which aspects of online gaming facilitates the sorts of powerful trust and intersubjective judgement that is of interest to authors such as Malaby and Jackson. In particular, what is it about the contingent, everyday experience of online gaming that contributes to trust and intersubjective judgement?

a unique kind of contingent space

Putting aside single-player games in this particular thesis, the forms of contingency in multiplayer online games are often of the kind where the necessary response is one in which co-operation is the only solution to the 'problems' arising in algorithmically created contexts. For those who are unable to build basic co-operative skills they are at a constant risk of failing at a given task, for example, to obtain many high level items in a game like *World of Warcraft*, gamers must be able to co-operate in completing a range of missions. The intersubjectivity demanded in online games is a perfect example of what Jackson earlier called 'imaginative displacement.' To succeed in online games, that is, to co-operate in game play, players must not only be able to predict what their fellow players will do in the game, they must also be able to interpret how their interlocutors see them. That is, they must be able to anticipate and judge their combined actions and representations: their combined intersubjectivity. It is this sort of processual act that while not always inherently necessary, are however structured in such a way such that they feature as the most efficient means of progression in game play.

While intersubjectivity can be utilized by player as merely instrumental means to achieve in-game goals, and do not inherently facilitate relationship-building each time they occur - there is a second reinforcing feature, that of *repeated* collusion. Online games are designed in such a way in which there is rarely an 'end point' to be reached. The built-in longevity of game play places individuals in a context whereby they interact with others hundreds of thousands of times over the course of a game. It is this sort of quotidian-ness of contingent experiences that enables the accumulation of intersubjectivity. The contingent contexts may range dramatically in the emotional

response they can illicit, but an impact always exists within the range of play, whether that impact is a mild disappointment at the possibility of not achieving a simple goal or a more intense, visceral, on the edge-of-your-seat excitement during a group attack on a monster that your clan has never managed to kill before.

There is, however, a contradiction at play here. Just as games, to a certain extent, discipline and force individuals into intersubjective action which require the imaginative displacement described by Jackson to coordinate social action, they are also for the most part, played by choice. Within these coded structures, ones that are simultaneously rigid and flexible, we must always keep in mind that crucially, unlike many refugees or new migrants, the millions of individuals playing online games are, for the most part, *willing participants* in these contingent environments. Most individuals can leave at any point[9]. As Silverman and Simon (2009) argue, while behaviours shown in games can appear to be reflective of a sort of paradigmatic example of a cultural act, we must keep in mind that the entire system can fall apart as soon as someone steps outside of the box within which they are building this cultural repertoire of actions. I argue that this freedom has a dual effect: in one way it certainly makes the risks, such as 'dying' in a game, much less harmful than the contingent risks in other contexts, that is, in losing a lot of land or a chance at a green card in the immigration lottery; yet, at the same time, it also makes online games unlike any of the contexts which are invoked by Jackson, ones that involve anthropologists, colonial officials or global travellers. In the intersubjective experiences of online gaming the 'other,' for the vast majority of cases, also *want to fully* participate,

[9] One significant exception being gold farmers, those individuals who have been hired to accumulate 'virtual' gold and sell it for real currency. See the following chapter 'Ethnography of Gaming Infrastructure' for a more in-depth discussion.

and being able to leave at any time, enters into contingent contexts under fairly equal power dynamics.

These unique manifestations of contingency which require a certain level of intersubjectivity that is both continually repeated and flexible in its outcomes, can also produce a variety of social outcomes. It is this sort of quotidian yet powerful contingency that brings me back to the journal entry which preempted this chapter. After interviewing dozens of gamers over many years, it remains truly amazing how many of them are simply unable to recall exactly how they met the people who eventually became some of their closest friends or lovers. The ethnographic examples describing deep interpersonal relationships like the one from my journal have become common place in ethnographic studies (Chen 2009; Taylor 2006; Williams et. al 2006, Jansz and Tanis 2007, to name a few). The levels of trust and social capital (Williams et. al 2006) built in online games, as demonstrated in my journal entry, are powerful and binding – results far more potent than simply the 'reflexive recognition' of the 'other' in the anthropological account described by Jackson. Online games are facilitating the possibility for the construction of trust and judgement in a medium previously non-existent to us by transforming the contingent, but fairly specialized contexts invoked by Jackson, into a daily experience. There lies a monumental potential in online games: linking millions of previously unconnected individuals into relationships, fleeting and ephemeral ones or long-lasting and deep ones, across huge spatial barriers.

conclusion: barriers and openings

The potential for the power of online games as an everyday experience is becoming increasingly clear, however, there remains further possibilities. The original reason for Jackson's impassioned argument for a reconceptualization of judgement is to better understand a secondary, dialectically connected human conception of the world: *understanding*. For Jackson judgment always has the potential to become *understanding*. Understanding in this thesis is not conceived of in an abstract sense, but grounded in situations where human beings endeavour, even in the slightest, to "accommodate any kind of radical otherness" (Jackson 2009: 239). Judgement is the starting point from which *understanding* must begin. Understanding begins with "particulars and things close at hand rather than sweeping generalizations" (Arendt, 1971:193 in Jackson 2009: 240). To have tens of millions of individuals to begin even the simplest of relationships with global others is incredible in its possibilities if only mundane in its beginnings. It is out of the seemingly mundane, the everyday (Lefevbre 1961 [2002]), where some of the most powerful political and social changes begin. How are these new networks of everyday trust and understanding developing? The invocation from Arendt, above, (1971 in Jackson 2009) of a spatial metaphor (close at hand) and reference to distance is crucial. Despite a rapidly globalizing the world, human beings are still strongly imbued within the technosocial forms of the local and, to an extent, the national which inform a vast variety of experiences including judgement and understanding of others. One of the driving factors that has always aided spatial-social reconfigurations, however, is technology:

technology that is manifest across multiple layers, from the algorithms through which online games are brought to life and shape player action, to the infrastructures which open up geographically diverse networks. The very technological structures which are helping to manifest the sorts of contingent, intersubjective networks of understanding that I have described above, are also the very structures which bind people into differentially stringent geographic and economic regions. Furthermore, games remain highly bounded by the same constraints of real life - language barriers as well as government regulations. Indeed, it is this way that this analysis gains strength as well as develops humility in the process. The argument for the rapid development of everyday contingent social spaces does not make for a forceful argument from assuming that games are transforming the world overnight. Networks of trust and understanding will always begin from the seeds of existing cultural, political and infrastructural networks - where they go from here is a question left for those on the edge of the diverse and growing networks of game play taking place around the globe.

Online games are repeated moments of intersubjective collision/collusion in contingent spaces. Everyday, they potentiate millions of opportunities to build if not understanding, then at least plant the seeds for it. Even when game play ends for the day it is simply "an arbitrary closure that leaves both self and other with a provisional and open-ended view that demands further dialogue and engagement" (Jackson 2009: 242). This analysis has sought to reach a broader, more ubiquitously meaningful conclusion than Jackson's. I have argued that to play an online game is not to simply "displace ourselves from our customary habitus" (Jackson 2009: 241) but to mutually build (even if only temporarily) a new habitus with geographically distant (yet limited) others. This

new context is not necessarily a challenge to the other social-economic structures that make up the daily lives of gamers to be fundamentally powerful in changing the human experience. In fact, the conception of gaming networks built here has its strongest roots not in the abstract desire for political change and equality but rather arises out of the most basic desires of human beings, that of sociality.

To play online games is to be caught up in a continual dialectic of contradiction between coded pathways and individual agency, transnational networks and local political and cultural restrictions, desires for sociality and linguistic barriers. In the end, however, it is the strand of intersubjective experience of contingency that runs through all these nodal points and in doing so, potentiates judgement and understanding at an accelerating rate.

If we are to further understand how these complex intersubjective networks are composed what is needed next is a careful look at how the physical infrastructures upon which gaming sociality is being built influences these emergent, broader technosocial assemblages of play. Examining the influence of infrastructure on shaping these new digital practices and relationships is crucial for us to comprehend the pathways along which understanding can flourish. In order to do this I now proceed to develop what I call *ethnography of gaming infrastructure.*

Ethnography of Gaming Infrastructure

In the first section of this thesis I argued that online games are a contingent context for social encounters that increasingly represent everyday, pedestrian experiences. The second part of this paper looks at how online games as semi-bounded contingent spaces, uniquely manifest new social forms in interaction with existing technological and social groupings. I build on the recent work of Taylor (2009) as well as Crogan and Kennedy (2009) in constructing a more a definitive way to approach these complex, often 'invisible' technosocial assemblages that shape the emerging social practices explored thus far. I attempt to build a framework with which to view these assemblages as not merely re-inscribing pre-digital social relations but as shaping sociality in ways which are often unique to online games. In order to build this framework I draw on the 'ethnography of infrastructure' (Star 1999, 2002). Utilizing the theoretical and methodological tools that have been used in understanding other complex technosocial systems in the context of game studies will draw out some of the important layers that influence social practices in online gaming. It is by moving through these layers that we see the ways in which gaming infrastructures create unique social geographies of practice. The result of this section is an argument for a more refined view of gaming sociality, one in which contextually bounded language and metaphors are developed.

In this section I begin by exploring some of the recent body of literature in game studies which are grappling with the complexity of representing technosocial practices in online gaming. Building on these new studies, I ask what approaches or tools can be used to study a technosocial assemblage in action. I utilize and modify Star's (1999) analysis of the identifiable commonalities of infrastructure to show how elements such as

network speeds, server location and their relationships with standards, regulations and geographies inform unique configurations of networked sociality. I conclude my methodological development by suggesting that a focus on disjuncture helps to highlight the full texture of these layers. My thesis thus argues that while gaming sociality is inherently complex, using ethnography of gaming infrastructure allows us to clearly illustrate how infrastructures and other technologies create broadly mappable social configurations out of these contingent, digital intersubjectivities.

the framework so far

Wilson and Peterson's (2002) conclusion after taking a detailed look at the anthropological study of technology was that technology has generally been regarded as "as a context for, rather than a central part of, culture" (450). In her review, Francesca Bray notes that anthropologists "invariably claim that anthropology as a discipline is particularly well suited to charting their [technology's] emergence" (Bray 2007: 43). However, when actually confronted with modern technologies anthropologists tend to approach them simply as "another set of metaphors" and focus in on the areas "that are most obviously cultural productions" (2007: 43). So what can a renewed focus on technology tell us about modern social relations?

Boellstorff (2006) has noted that early social science-based game studies research can be challenged for taking overly structuralist approaches to social practices, making the flawed argument that by simply studying the 'grammar' of games we can understand the sorts of social practices produced within them. Boellstorff, echoing newer anthropological theories of cultural production, views gaming cultures not so much as a set of scripts which are followed, but as being enacted within intersubjective

relationships. In order to untangle these complex relationships he says, anthropologists must rely on participant observation: the deep research that produces a mass of data while also letting anthropologists observe the disjuncture between what people say and what they actually do (Boellstorff 2006).

The standard caveat follows, of course, that one must be careful not to push too far in the other direction, emphasizing the agency gamers' possess in ways which may transcend the actual structures under which social practices must inevitably occur. Silverman and Simon (2009) concisely identify the main problem within the tired structure versus agency framework (Silverman and Simon 2009: 356):

> The old problem of the agency of the gamer versus the structures of the game in which they game is a red herring from a sociological point of view because agency always only makes sense within kinds of structural fields which give meaning to individual action.

It is in a third direction, away from this stale debate, that some scholars (Taylor 2009, Crogan and Kennedy 2009) have recently concluded that in our back-and-forth argument over whether the 'grammar' of games or the 'agency' of gamers was more important in producing the experience of play, that we have somehow tended to ignore the foundational material and social technologies which support the entire system. In response Taylor (2009) has suggested an expansion of the scope of game studies by invoking the notion of an 'assemblage', which is a complex and multi-layered approach to the overdetermined nature of technosocial reality. It is worth quoting Taylor's description in full here in order to distil the diversity of elements this approach attempts to deal with (Taylor 2009: 332):

> The notion of assemblage is one way to help us understand the range of actors (system, technologies, player, body, community, company, legal structures, etc.), concepts, practices, and relations that make up the game

> moment. Games, and their game, are constituted by the interrelations between (to name just a few) technological systems and software (including the imagined gamer embedded in them), the material world (including our bodies at the keyboard), the online space of the game (if any), game genre, and its histories, the social worlds that infuse the game and situate us outside of it, the emergent practices of communities, our interior lives, personal histories, and aesthetic experience, institutional structures that shape the game and our activity as players, legal structures, and indeed the broader culture around us with its conceptual frames and tropes.

In order to begin conceptualizing these overdetermined fabrics of technology and intersubjectivity, I begin here by scrutinizing one unexplored and crucial element in the bricolage of the technosocial: infrastructure. Following this, I assert that a focus *disjuncture* serves as a key starting point for illuminating these salient infrastructures.

ethnography of gaming infrastructure: an overview

Despite the rapid speed at which Internet and communication technologies are developing there remains particular characteristics of these technologies that are identifiable over time. These characteristics have been called "a framework of technical design, costing, and regulation (local or transnational) that channels and constrains the forms of communication and sociality it allows" (Wilson and Peterson 2002; Wilk 2005 in Bray 2007: 46). Key aspects of this framework that are salient for gaming include features both material and social and both small and large, such as broadband vs. narrowband network access, government regulations, data transportation technologies, political-economic contexts and geographic formations that all impact the nature of online gaming. The idea of gaming infrastructure presented in this thesis further contributes to this framework by including material and social elements like the placement of servers, gaming hardware design and its constraints, the algorithmically

coded as well as micro-infrastructural artefacts of gaming like the Heads up Display (HUD)[10].

These examples contribute to a core idea presented in this thesis: all technical elements are intrinsically tied up with the practice of sociality online. As mentioned earlier, it is not extraordinary that these elements have generally been left unexplored in social scientific research as this is most easily attributable to the dominance of a long standing framework that situated games as solely bound up with play. However, as Malaby (2007) has concisely stated, it has simply become difficult to demonstrate that play is anything other than *productive*. The term *productive* here is used in the sense that during play, things get done. These productive acts can range from creating fun with others, building social relationships to generating economic value. Despite the work of game studies scholars over the five years to advocate for this position, however we have yet to utilize the theoretical and methodological tools developed in the studies of other 'productive' systems (Bruni 2005; Star 1999) and apply them to the productive activities occurring in online games.

I thereby propose to adopt and reconfigure some of these academic tools. In reconfiguring these conceptual apparatuses I argue for a focus on several infrastructural-social nodes. The framework developed here is based directly on Star's (1999) paper 'Ethnography of Infrastructure' which lays out a template for identifying infrastructural properties of productive systems and some of their possible effects. In the following sections I firstly draw on Star's conceptual framework as well as provide a few examples of ways to methodologically identify these layers. I follow this process by giving an

[10] The Heads up Display is the graphical interface which users interact with. This includes both the launch screen to enter into a game as well as the overlaid information visible on the screen while playing such as 'ammunition' or 'health.'

example of how my modified framework is best applied by taking the idea of *disjuncture* as a key methodological disposition.

macro and micro materialities

It is easy to see how infrastructural elements of online games fade into the background as the daily practice of playing online games emerges. Infrastructure's transparency is a testament to its efficacy and longevity (Star 1999). Infrastructure lacks the palpable presence of the game in its supporting role. One way in which infrastructures do become manifest, however, is through their geographical or spatial natures. At one level, which I call the *macro-material,* technological infrastructures remain embedded within geographic structures, constraining their objective to facilitate the compression of space (Figure 2). This macro-materiality means that all gamers and infrastructures are geographically situated. This situatedness derives from the fact that gaming infrastructure, like any other interrelation of physical infrastructure and sociality, is part and product of a series of historical and technical developments that have taken place across the world. This idea that infrastructure is always built on an installed base (Star 1999) is also well elucidated by Stephenson's study of the FLAG cable development. Gaming infrastructure is literally wired into older structures like submarine cables (figure 2), power grids and telephone wires.

2009
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INDIAN OCEAN
CHINA
RUSSIAN FEDERATION
AUSTRALIA
ARCTIC OCEAN
PACIFIC OCEAN
CANADA
MEXICO
UNITED STATES
ARGENTINA
BRAZIL
ATLANTIC OCEAN
ARCTIC OCEAN
RUSSIAN FEDERATION
INDIA
FIBER-OPTIC SUBMARINE CABLE SYSTEMS

Figure 2: 2009 Submarine Cable Map (Teleography 2010)

The vast majority of data transmitted around the world still travel through old wires and cables originally designed to transmit other forms of information. In this way the current Internet infrastructure remains strongly tied to the reach and scope (1999) of a system that has been growing rhizomatically over time, incorporating a mix of old and new data transportation technologies.

At another level, which I call the *micro-material*, we have a variety of what can be called standard material technologies. One example would be something such as the computer mouse. The computer mouse is widespread technology and through its properties, use, and interaction with other technologies, it strongly shapes social dynamics in online contexts. As an interface tool, computer mice allow users to interact with on screen objects and spaces while avoiding some of the major concerns with touch screen technology such as user fatigue (imagine holding you arms up for hours at a time) or blocking one's own field of vision with one's own body. In the context of game play, the computer mouse is normally used in conjunction with the keyboard and monitor. This default configuration has meant that playing a game on a personal computer (PC) as compared to a gaming console[11] can be a significantly different social experience. In PC-based gaming the use of the mouse to navigate the game on the screen means that users are able to simultaneously utilize their keyboard and microphone while still being actively engaged in the gaming world. In console-based gaming, where a controller requiring two hands is used to navigate the game has meant the nearly exclusive use of voice during game play. The use of microphones as a form of communication as opposed

[11] A console refers to a video game system that is hooked up to a television set such as the Playstation 3 or the Xbox 360. For the most part the interface equipment normally involves one or multiple controllers as opposed to the common pair of the keyboard and mouse used on PCs.

to having the option or being restricted to type in some PC-based games can encourage/discourage particular types of individuals, particularly women or younger children from participating in dialogue and intersubjective co-operative actions (see Hunter 2006 for a discussion). We must now situate these macro and micro-material infrastructures within the relevant social and political conventions in which they are interlinked.

political and social conventions

To play an online game is to not only enter into particularly situated and developed infrastructures, but also to become embedded within certain *conventions of practice* (Star 1999). On the macro scale these conventions of practice are reflected in the political realities that are relevant to gamers. These conventions include things like national and international rating systems that set age restrictions for purchasing games, the regulation of games and consoles, tolerance for or strict enforcement of piracy of video games and a host of other legal and political issues. To understand gaming infrastructure then is to follow the broad connections between entities such as government dispositions towards new technologically-based emergent social forms and specialized tools that gamers use for a number of purposes.

Furthermore, while each infrastructurally bounded networked social form is necessarily tied up in larger political conventions such as laws and regulations, there also exist the internal conventions of practice within online games that are *learned as part of membership* (Star 1999). Basic membership skills and knowledge is required for anyone who wants to participate in certain activities. These skills include things like being able to effectively navigate a given overhead display or understand the game vernacular

necessary to play particular games or use VoIP programs like Ventrilo[12] while also carrying out in-game actions. The ways in which gamers carry out actions, social and otherwise in games depend on that "the taken-for-grantedness of artefacts and organizational arrangements is a *sine qua non* of membership in a community of practice" (Star 1999: 381). These artefacts and organizational configurations range from the broadest social convention of what languages are necessary or tolerated on a given server (Taylor 2006a) to the arrangement of complex social hierarchies that are common in games like *World of Warcraft.*

The aspects of gaming infrastructure such as being *embedded* in infrastructures both large and small as well as being *conventional* are, of course, inherently bound up with one another and any conceptual separation I make in this thesis is only for purposes of explication. Each layer of the gaming assemblage works together to shape/reshape the forms of intersubejctivity between spaces, subjects and actions (Bruni 2005: 358); therefore, all of these layers must be approached together. To carry out this complex task I now proceed to argue that a particularly effective methodological lens or filter is a focused gaze on something found in every modern technosocial assemblage: *disjuncture.*

methodological navigation: material and social disjunctures

In my modification of Star's (1999) conceptualization of the properties and possible effects of infrastructure I have excluded one of her defining elements. I have done so because this core element, that of *infrastructure becoming visible upon breakdown*, is better used as a focal point to begin research than one component of the definition of infrastructure itself. A focus on disjuncture in infrastructure is like akin to a modern

[12] Ventrilo is a popular VoIP program that gamers use to communicate with one another.

inflection of the old anthropological adage that it is often when things appear to be falling apart that we learn the most about the relationships between individuals, groups and structures. Similarly, some of the most interesting and illuminating studies of gaming practices have come out of what could be called unscripted acts.

The repeated discussions and debates around 'gold farming' in Massive Multigamer Online games (MMO's) like *World of Warcraft* (WoW) offer a range of disjunctures and tensions upon which to examine gaming infrastructures. Gold farming takes place when individuals, independently or working for a company, labour full time to gather in-game currency at the fastest possible rate. This 'virtual' currency is then sold for 'real' cash to gamers who wish to purchase it. This practice has drawn the ire of many players over the years, especially by those who feel that it ruins the 'fairness' of a given game. For example, in an effort to wipe out the practice of the 'farming' and selling of gold for real currencies, in 2005 Blizzard[13] launched a mass campaign of banning suspected farmers. Blizzard's campaign, which resulted in the ban of thousands of accounts, was justifiable from the view points of many players. In particular, players who were interested in protecting their investment of time and effort (Kucklich 2009) in the game, and who desired a fair gaming environment were happy to see suspected gold farmers banned in this way. The bans were complemented by in-game verbal and physical attacks on alleged farmers. The justification for an attack was often that the offender had 'determined' that their victim was 'Chinese.' This aggression has been described as reminiscent of attacks directed against early Chinese migrants to the United States who had set up laundry shops many citizens believed threatened 'American'

[13] Blizzard is the name of the company which created *World of Warcraft* and manages the large online community that has grown with it over the past six years.

businesses (Yee 2006b). While the banning of gold farmers in MMOs like WoW demonstrates how historically social and political-economic issues such as racism are traced into virtual spaces, what has remained unexplored is how these elements are tied in with particular kinds of infrastructure which they depend on to occur.

As previously described, a key component of online social forms is the way in which gamers are geographically embedded within particular configurations of infrastructure and conventions of practice. One such example is demonstrated by the method by which Blizzard identified suspected farmers for subsequent bans: the presence of Chinese IP addresses[14] logged on to North American servers for extended periods of time. This logic used for banning individuals makes sense only by understanding the way in which servers are situated locally and globally. Contracts between Blizzard and Chinese gaming companies were arranged such that Chinese gamers have their own nationally controlled and located servers to play on. These contracts are required by the Chinese government which demands Chinese gamers play only on domestic servers. By exclusively playing on these servers, the gamers are subject to in-game content which is modified, regulated and controlled by the Chinese government. These infrastructural and conventional arrangements deem that a 'Chinese' gamer discovered on a 'North American' WoW server represents an anomaly. Furthermore, this idea of an anomaly is reinforced by the conventions of practice on North American servers which dictate which language is the 'official server' tongue (Taylor 2006a). In North America and much of Western Europe this language is undeniably English. Beyond this, another complex convention of practice exists within the game which assumes that 'real' gamers (i.e. those

[14] Internet-Protocol addresses are a unique set of identifying numbers that can be used to locate a users' approximate location.

that are not gold farmers) are unlikely to spend repeated hours 'grinding' (killing the same monsters over and over again for hours on end) in particular areas for experience and gold. This idea represents a particular cultural script that is a unique feature of this game. Individuals who Blizzard or other gamers feel have been logged in for too many hours a day or spent too long 'grinding' may become the target of a ban or other actions. These very characteristics when embodied in the game represent a disjuncture from the 'normal' infrastructural layout and conventions of game play.

WoW servers are thus fundamentally divided by language structures, contracts with outside firms, government regulatory polices historical artefacts as well developer protocol decisions. These components intersecting together in its unique configuration facilitates and provides opportunities for the conflation of particular ethnic groups and in-game characters with gold farming (Yee 2006a; Taylor 2006b; Steinkuehler 2005). These divisions and disjunctures reveal the nuanced ways in which technology mediates the positioning of groups of people in *infastructural* and *conventional* ways that disallows particular modes of interactions on a daily basis: a 'Chinese' gamer on a North American server is not welcome. Exploring the ethnographic context when friction arises reveals some of the more substantial outcomes of infrastructural and conventional interactions. The example I provide is the case of *World of Warcraft* gamers in Australia.

world of warcraft and a digital diaspora

WoW is the most popular MMO in the world and has a dedicated following in Australia. WoW was first released in November of 2004. The release of WoW led to an explosion

in MMO gamers to the point where WoW now boasts 11.5 million users as of December 2008 (Cavalli 2008).

After purchasing the game in store or downloading it, gamers must spend approximately $16 (US) a month to access the game. Upon entering the game the player must first select one server out of hundreds of servers. The average server hosts between 5000-20000 players and contains a game world which for the most part is a mirror image of all the other servers around the world, although their populations are separated. Each server contains its own unique history and players but the foundation of the game, game content and game play remains similar.

Figure 3: A group of dwarves in World of Warcraft (Shiny Shiny 2008)

Upon entering the world you first select a race (such as Elf or Dwarf) (Figure 3), a class (Warrior, Rogue, etc) and a faction (Alliance or Horde). The faction you choose will limit you to talking with only fellow members of that group, conversations across the factions become gibberish through the coding of the game. Based on the particular character you have created and choices you make in game play you then go on to develop certain skills, proficiencies and abilities. As you progress in the game, both in time, space, abilities and level achieved, you attain progressively more skills and talents and fight increasingly difficult enemies or other high-level players. Furthermore, there are vast arrays of activities that you perform. For example, you can fight against other players in order to achieve certain goals, you can travel throughout the different territories fighting different kinds of monsters, or you can complete a wide variety of quests, make clothing, chat with others, barter and so on.

One of the most anthropologically interesting social formations to arise in WoW are guilds. Guilds are composed of individuals, two or more, who form a more lasting association with one another in order to perform activities such as cooperate in the process of levelling[15], obtaining high-end equipment or engaging in Player versus Player fights (PvP). At the most extreme end of these sorts of coordinated group activities are guilds that devote a significant amount of their time to 'raiding.' Raiding is generally defined as 20 more individuals co-operating to defeat some of the most difficult monsters in the game. Defeating these "bosses" is a gruelling process that demands the players to expend a significant amount of their in-game currency repairing their weapons, dealing with group politics, as well as skilfully playing a particular role in combat (dealing damage, taking damage, healing damage and so on) in the group in order for the group to

[15] Leveling refers to the process of gaining levels over time, improving your character in various capacities.

succeed (WoWWiki 2010). Most importantly, attempting to achieve some of the most coveted high-end game items requires a significant time investment:

> When playing solo it is reasonable to expect a reward every 30 minutes or so (after solving a quest). In 5-man instances, it is normal to get about one good item per run (1–2 hours). The interval between such "successes" in raids is measured in weeks. The 25-man instances reset once a week, so each boss can be killed only once in seven days. Assuming 5 bosses and two drops per boss, this yields 10 items per week, so every single of the 25 gamers expect **at most** one item every two weeks. In reality, after the initial rush, when most people have the "basic" items, the wait time is more like one drop per month, and it's not uncommon for players to wait even several months for their last cherished item to drop (or never get it at all) (WoWWiki 2010).

Furthermore, beyond this very significant time investment of days, weeks and months, is the ongoing demand on individuals to be able to dedicate between two to three days a week, in the evenings, usually, for the pursuit of this activity.

For those individuals whose guild began from relationships inside of the game, the start of these groups are a paradigmatic representation of the ways in which the contingency of gaming events push people together in a range of ways. Steve, a friend both on- and off-line, describes his joining of one guild as serendipitous. He recounts how he was sitting in one of the main cities in the game not doing much when he saw a public chat (dialogue) message asking for a high level character who could serve as a DPS (damage per second) role in their 5-man guild run. Being familiar with the run he responded to their message and ended up helping the group of four significantly. The everyday practice in games like WoW of having unknown individuals substitute in to play the role of a missing friend, like a sort of large scale public soccer pitch, throws individuals into contingent and co-operative social experiences that lead to long term relationships. In the case of this simple and common gaming event, Steve told me how

he ended up playing with this particular group of individuals 2-3 hours a day for an entire year.

Matt's memory of how gained membership to his first long term guild are hazy but he describes it has having begun in his drive to succeed. With his reputation beginning to build on his server, Matt used to take it upon himself to carry out friendly sparring in public, often defeating other classes of players who were much stronger than him and who were 'supposed' to win. Because of his growing reputation, a higher calibre guild on the server began to 'borrow' him away from his regular group of people with whom he played. They had recognized him from his public duels as well his general profile around the server. When they asked him to join one day he said 'yes.' For having been spotted outclassing other opponents in a non-competitive context of sparring, he thus ended up being drawn into one of the most 'hardcore' guilds in North America. His membership within the guild only finally ended around three years later with over 8000 hours played.

like trying to speak while someone is strangling you

Investing thousands of hours in gaming brings a wealth of different infrastructural and conventional factors into play and one does not need to search far for disjunctive issues as they are readily found in this community. Online discussion forums are rife with them. The official forums for WoW are an excellent place to explore a variety of issues regarding playing WoW from Australia.

One of the most salient issues for Australian WoW raiders concerns their 'pings' – a topic that evokes strong emotions in many players. Ping refers to the round-trip time

it takes for data to transfer from the gamer to the server and back. Many Australian WoW players have complained over the years that their pings have been far too high for a variety of in-game activities to be successfully accomplished. Their ping prevents them from being able to move around fluidly and deal with the minute, split second reactions required for raiding combat. Consequently, many Australian WoW players have had difficulties carrying out these important gaming acts. For some players a high ping represents a critical reduction in their ability to perform actions that are dependent on perfect timing; situations that require these sorts of "[s]plit-second decisions and reflexes [that] make aus/nz gamers look like complete NOOBS[16]" (World of Warcraft Forums 2009).

The influence of ping on the ability to perform particular gaming acts and the relationship this has with sociality brings out one of the significant and unique aspects of games as a technosocial assemblage that does not exist in other forms of media. Giddings (2009: 151) describes this revolutionary change as:

> the generation of new relationships and distributions of effect, affect, and feedback in everyday digital culture, of technicities not reducible to human identity and competence; a phenomenon that can only be adequately addressed through acknowledgement of its bringing together of heterogeneous part(icipant)s.

One of these dynamic and new circuits is found in the ways in which gaming software mediate and translate multiple infrastructural, technological and algorithmic layers into *physical, tactile experiences* that players react and adapt to. It is in this way that players of both FPS games and MMOs such as WoW *feel* and *describe* the effect of bad ping (lag) as a visual-physical sensation. As one of my participants, Jim, explained

[16] 'Noob' is a slang expression often used by gamers to describe a new player. The term is often used in a derogatory way to insult the skill of a given individual.

"it feels like you are in a straightjacket, that is exactly how it feels, like your in a straightjacket trying to catch a baseball." His words concisely describe the strong physical and emotional reaction gamers have to the impediment of the machinic-human flow as contrasted to the experience of uninterrupted connection. Another forum contributor described the feeling of playing, and lagging, from Australia as "like trying to speak while someone's strangling you" (World of Warcraft Forums 2009). It is this visceral, emotional and physical reaction to playing that partially explains the often seething anger displayed by many users who are unable to experience the game as other users are able to. These deep emotional reactions are understood in the context of infrastructure and disjuncture: described by users is their very real emotional reactions to interrupted playing experiences is *literally* the bricolage of infrastructures and codes as translated through wires, through the coded game play and *into their very hands* – a tactile, literal human-machinic interaction that is manifesting complex techno-geographic-political infrastructures.

This tactile, human-machinic intersection has been conceptualized by Giddings as a further complement to the notion of assemblages, arguing that a post-human approach is a necessary starting point in understanding online games. Giddings contends that if we are to truly understand games we must realize that "clear conceptual distinctions between virtual and actual space are unsustainable" (Giddings 2009: 151). This ontological deconstruction will play an important rule in highlighting how an infrastructural focus clarifies both broad social issues along with microlevel events in game play.

The ability for humans to 'feel' and negotiate geographical-technical assemblages exposes Australian WoW players to the ways in which they are disadvantaged compared

to other users around the world. Focusing firstly on the issue of 'ping' and 'lag' directs us to looking at how Australian WoW players are situated within particular forms of macro-material infrastructure. Perhaps the most straightforward example of this is simply Australian WoW players' geographical situatedness. The historically difficult geographic position of Australia within global communications, transportation and travel networks remains, unsurprisingly, an issue in the context of contemporary media and communication technologies. Despite the incredible speed at which data is able to travel over the Internet it is still embedded within existent infrastructures like the submarine cables. This geographic situatedness is reinforced by the fact that Australian infrastructural development on land also *lags* behind many other countries in terms of Internet speed and access to broadband (The Sydney Morning Herald 2009); meaning that even as new cables are built, internal infrastructures have yet to catch up with the bandwidth available for general use.

These contexts of macro-material infrastructural development and geographic situatedness are further exacerbated by a major decision on the part of Blizzard (the owners of WoW) against installing any servers on the Australian continent. While there is clearly a wide variety of server providers available to host WoW in both Australia and South East Asia, no Blizzard authorized servers have been set up in the six years since the game's release. This micro-material infrastructural context has further frustrated Australian players who, as noted, have had continual problems with playing on overseas servers, to the detriment of their ability to raid.

Australian players have been compensating for these infrastructural issues for many years. The very first means by which they did this was by simply joining other

English speaking servers that had the lowest pings, severs mostly scattered along the West Coast of the United States. However, as Australian players began to achieve higher levels and sought to join raiding guilds, social conventions came to fore. Australian players who tried to join guilds that were comprised of mostly North American members quickly discovered that their American counter-parts are functioning within the social conventions that circumscribe American lives, not Australian ones. This means raids would usually take place at 7-11pm Pacific Standard Time for many guilds based in the western United States. Translated into Australian Eastern Standard Time, this would mean raiding in the middle of the day, which is not a viable option for most players. Furthermore, player's who were able to raid in the middle of the day in guilds made up of majority North American gamers spoke of accommodating their day around the problem of time constraints only to be subbed out of raids because of their ping issues.

Australian players never held back and vocalised their desires for Blizzard to set up servers in Australia so they would be able to play on their own structural and conventional terms. In response to early outrage, Blizzard did eventually create a list of Oceanic servers, much to the delight of thousands of Australian player. This happiness quickly subsided, however, when it became clear that the servers were actually not in Australia at all, but were simply US based servers with their internal clocks set to Australian Eastern Standard Time! The protests grew again, as well as suggestions of a mass boycott of the game; however, it remains that most players are so heavily invested in the game both socially and in terms of time spent that they do not appear to be willing to build any sort of active and physical protest against Blizzard.

One of the consequences of this technological and conventional intersection has been the creation of a uniquely structured form of networked sociality. In the case of Australian WoW gamers this has meant the migration of players towards 'chosen' servers. This has resulted in, simply put, a *digital diaspora.* In an effort to find a place where Australia players could establish guilds made up mostly of other Australian gamers, particular servers slowly became favoured as sorts of home-away-from-homes. A paradigmatic example of this digital diaspora is the *Blackrock* server, an online home which has taken on thousands of migrant Australian players to the point that the server has large queues with lengthy wait times for Australian players to get in during peak hours. Being able to mutually play under the same social and infrastructural constraints on a server such as *Blackrock* has given Australian gamers a sense of parity, at least in the sense that they understand one another's issues.

Secondly, another response to these issues has been the establishment of illegal WoW servers hosted off individual machines on the Australian continent. These servers have been able to provide Australian players with the local infrastructure upon which to game with reasonable ping and at reasonable hours. The matter of running one's own server, however, are complex and manifest in other issues such as how to pay for the large amount of bandwidth use, complications with updates and efforts to keep population levels high enough within the server to make the server enjoyable to play on. Furthermore, setting up an illegal server cuts off the gamer base from the ability to legally transfer characters to other 'official' realms, if desired. If the server dies, so does the player's character, forever.

For Australian WoW players interested in carrying out high-end and fast activities like raiding, the consequences of choosing either of the two options are mixed. While players have clearly adapted to new environments to be able to enjoy the full benefits of game play, Australian gamers have, to a certain extent, been forcibly severed from the sorts of mundane contingencies of playing on servers that provide the context for cross-state and international relationships that are likely to form among players embedded in a similar infrastructural and conventional setting.

conclusion

By turning our attention towards one community and utilising a methodological lens of disjuncture, we can elucidate a series of infrastructural layers which affect social relationships in digital spaces. I hope to have provided a methodological base from which the stories of technosocial assemblages can be described. By focusing on sometimes overlooked infrastructural issues even within what are generally described as 'highly developed' countries, we are nonetheless able to elucidate a rich fabric of technosocial layers. By better understanding these layers now will help us to comprehend how future infrastructural changes can mediate a range of emergent educational, legal, economic and social actions yet to be implemented.

It is clear that in order to understand emergent forms of sociality our conceptual and methodological tool kit must be itself reshaped with greater ability to scrutinize a broader range of elements in the gaming assemblage. Rather than just studying a few orphan ideas, we need to build a multi-sited gaming research forum from which we can study the entire spectrum, from game design to game play.

To be a *World of Warcraft* player in Australia is to be enmeshed in a particular technosocial assemblage much different than a player living in China or in California. If we are to better understand the role of contingency and technology that may bring people into new and complex forms of sociality and networks of understanding, it is increasingly clear that we need to trace how material and social infrastructures will impact these forms. I have argued that one key object, ping, and the issues that surround this object important for gaming – is both a driving force in shaping the contingent forms of digital sociality, but also, by following where it arises in discourse, is also a source of understanding of the issues crucial to players' experiences in their everyday game. In the next section, I plunge further into exploring this artefact, asking how ping translates across different gaming experiences and social forms.

Remapping the Digital World

In 1999 a young Vietnamese-Canadian undergraduate student began developing a video game in his spare time. Reflecting back on the time he spent working on the game, Min Leh remembers that "[w]hen I started I was in my last semester, and I was doing it in addition to school, I spent about 20 hours a week" (Gamasutra 2001). When he finally completed his game, *Counter-Strike* (CS), it was released in 1999 and it was generally ignored by the video game industry. While it generated attention in some small gaming communities, the fact that it had been developed by a single individual in an industry where games already had budgets in the millions of dollars, meant that in the eyes of major video game firms, CS was likely to fail.

CS has a very simple plot and design. It pits one team of five counter-terrorists against an opposing group of five terrorists (Figure 4). Each team would begin on opposing sides of a map before moving towards one another, eventually engaging in combat with whatever weapons they had purchased or picked up off of dead bodies. Each round lasted for around two minutes and this brief timeframe put pressure on players to complete their goals, individual or team based. When every member of one team dies or the clock runs down, the bomb goes off or the bomb is defused, another round, much the same as the last round, would restart. This seemingly simple game with a very basic structure and premise was addictive. In the months following the release of CS, fan websites dedicated to the game were set up on the Internet. Internet Relay Chat (IRC) rooms dedicated to CS were created and e-mails offering assistance, demanding changes or simply paying compliments, began arriving in Min Leh's e-mail inbox. The game's popularity grew at an unprecedented rate and it quickly became one of the

world's first globally popular online FPS games. To this day the abbreviation 'CS' is immediately recognized by gamers around the world and across diverse languages. In the following years, millions of people have played the game and today, many continue to do so. CS continues to sell, 10 years after its release. The total sales for the three iterations of the game are over 9.2 million copies, a figure which remains impressive in the game industry (Wired 2008).

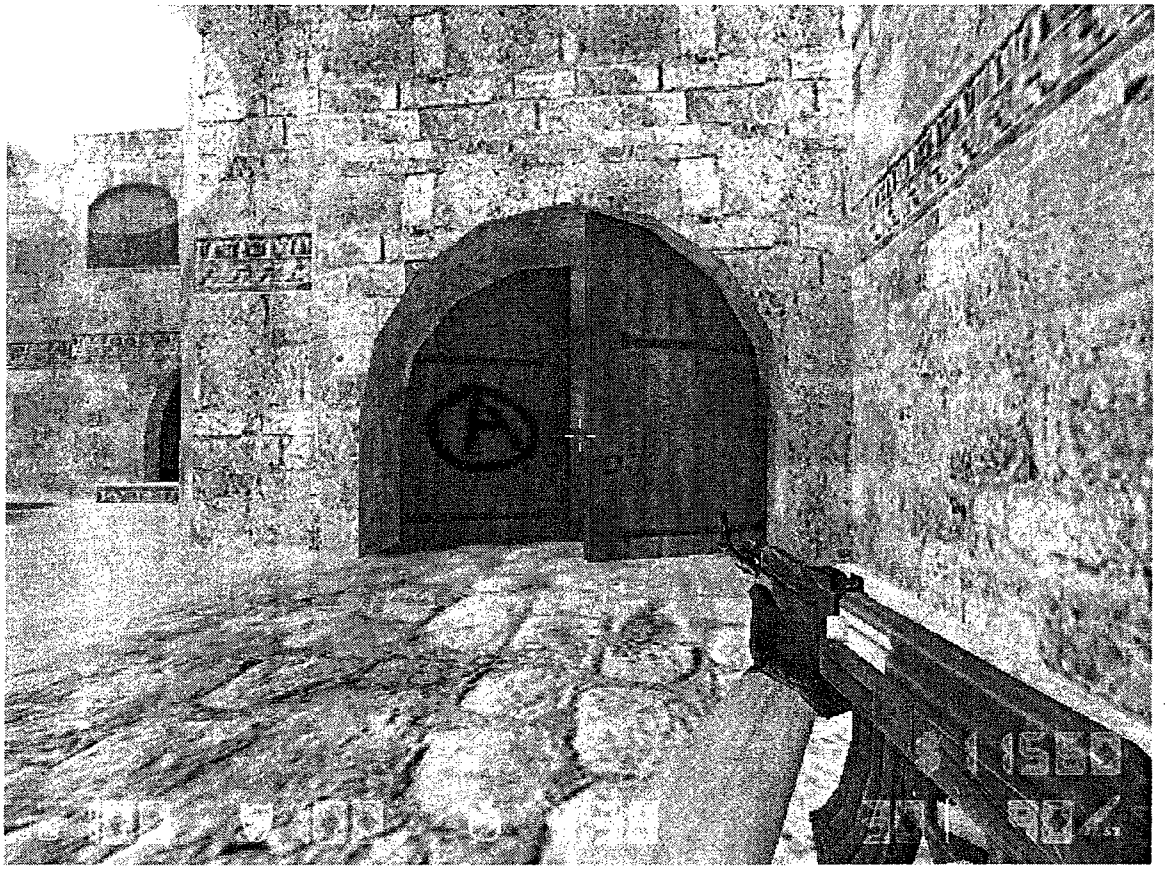

Figure 4: A terrorist holding an AK-47 in 'de_dust2.' (HLTV 2010)

introduction

The relationships between the complex forms of computer mediated interaction like CS and infrastructures often appear incommensurable. However, as has been

discussed with the example of Australian *WoW* players, complex technosocial assemblages necessarily underlie all forms of gaming and social practices. In this section I extend my framework further into networked game by delving into a fuller exploration of how one of the issues described in the previous section, *ping,* dramatically mediates the process of relationship building in digital environments for players around the world.

I have argued that if we are to become conversant with new forms of technologically mediated social interactions and practices – the whole gamut from presentations of self, exploration of alternative subject positions to government or developer regulations and limitations on game play – we need to understand the ways in which the technological context of these interactions shape the processes occurring within them. Beginning with the suggestion of a relationship between contingency and social judgement, I then posited that these emergent and possibly transformative social relationships are best captured by a well developed and executed ethnography of gaming infrastructure. Based on the argument that games function as productive spaces and share similar properties to other productive contexts, I have suggested that a lens on the infrastructural and conventional nature of online games, with a focus on disjuncture, can elucidate elements crucial to understanding game play and sociality.

In this section I take a more detailed look at one particular game and the configurations of sociality that have emerged from it. The purpose of this work is to tease out the ways in which embedded infrastructures merge with conventions of play to create the framework where negotiated social action takes place. I argue that if we are to understand sociality within CS we can do so by examining particular aspects of gaming infrastructure: the geographies of servers, the impact of how software is coded and

displayed to users and how these infrastructural factors intersect with the conventions and needs/desires of players. In order to grasp these intersections I once again focus on the object of *ping*. Ping here, again, refers to the round-trip time it takes for data to be transmitted from a given player's computer to the server and back. Like my example of Australian raiders, by peeling back the infrastructural-social layers that surround this one element and the disjunctures that arise from dealing with this object in game play, I can begin to make my final argument show how space is infrastructurally re-mapped as the result of discrete material technologies. To do so I draw on the quantitiave work of Feng and Feng (2003) as well as Armitage (2003) to outline and redraw the ways in which we understand online gaming social networks. This body of literature, originally written with the goal of improving network design, is particularly useful in this instance for drawing out the technical aspects of game play that are often ignored in the social sciences.

Focusing on this 'older' game has a few advantages. Firstly, looking at an older FPS game offers a different context of study through which to apply some of the methodological and conceptual tools built in game studies over the past five years and allows the users of these tools to check its fidelity against games they were originally unintended to analyse. For us to understand the efficacy and limits of any conceptual tools they must be tested in different gaming environments. The continued growth of the diverse networks of online gaming platforms such as Steam, Xbox Live and the Playstation Network act as some of the biggest drivers of this market for FPS games such as CS. Secondly, studying a game that is now over 10 years old provides a significant

time span in the world of online gaming to trace how technologically mediated social relationships have developed over time.

cs takes off

Counter-Strike (CS), as noted, is a first person shooter modification developed by Min Leh in June 1999. Based on the engine of the game *Half-Life*, CS was developed as a *mod* and distributed free to the global gaming community, rapidly gaining popularity. Games are considered '*modded*' when individuals utilize the existing physics and collision engine in published games and instead *mod*ify the graphics, sound and genres layered on top of the engine to create different gaming environments. In CS this was represented by the creation of small self-contained 'maps' for multi-player gaming as well as the changes to the graphical models.

The early social history of the game began with individuals setting up their own servers which would run off of their PCs. After being set-up other players could connect to these servers and they would become brief localities for gamers to connect. As the game continued to grow in popularity people began utilizing the free-to-download server-side client[17] and there soon developed a large number of dedicated servers. Dedicated servers are, for the most part in FPS games, set up as 'pubs' or public servers. Public servers are gaming servers that are generally online 24 hours a day and can act as a permanent home for gamers to connect and play on. In the past, public servers were identified through basic information that all gamers could access once they logged into the World Opponent Network (WON) - the network software through which information

[17] As CS was not a commercial game when it was originally released, the team that had developed it gave everyone access to the server-side client, essentially allowing anyone to set up their own CS server with relative ease. Many games do not allow users to set up their own servers.

and connections between gamers, servers and other gamers were transmitted. The WON network was in place from the first iteration of CS and used until Valve, the company that had originally developed *Half-Life*, purchased the game and released its own new interface, although the information provided in the visual aspects has remained similar.

As expected, the reasons why people played CS for the first time vary. Some did so because their friends recommended the game, others read about it on a website while others stumbled upon it by accident through the random searching of the Internet. Once played, many became hooked. One of the most influential experiences that pulled people so deeply into this game, and kept them playing for years, was the first public server on which they became a regular fixture. Public servers were, for many players, the homes through which they began building their first online social networks; networks that for many continue to this day and have expanded into other servers beyond CS and into other gaming networks. It is worthwhile to take one step back and ask, what were some of the major factors that influenced a given individual to make that first step of logging into one public server as opposed to another? To explore this decision is to begin a process of tracing out some of the unique ways in which interface design intersects with gaming infrastructures and social practices to uniquely map social relationships on to the patterning of games and game play.

the good ole (laggy) days

You have logged into CS for the first time and you want to play, *now*. How do you decide on what server you are going to use? When activating CS for the first time you are given a very limited amount of information upon which to base your decision. In the earlier WON network days (figure 4) you would be able to see the name of the server,

how many people were playing, as well as a stack of either red, yellow or green circles. In the WON program these little green circles served as a symbol to provide an approximate idea of what your network connection speed would be like in a given server, with green understandably representing fairly fast and red being the opposite.

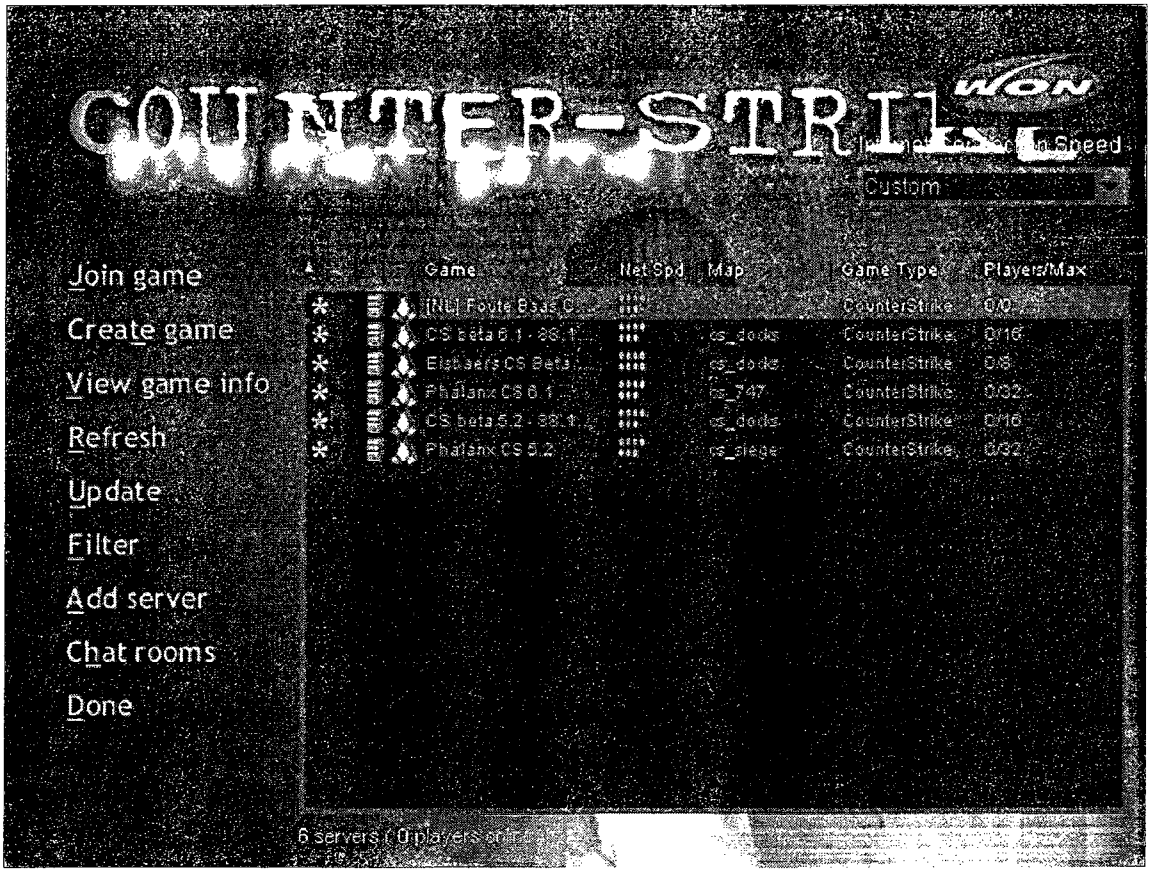

Figure 4: The WON connection screen (Essemtrix 2010)

With a very limited amount of information provided when you first start playing the game, for many, the green circles were the most straightforward way of choosing a server. If you were to join a server with full red circles, however, you would quickly discover the negative consequences of your choice. In games like CS, which are structured around the instantaneous death of your opponent and milliseconds literally make all the difference, there is understandably an inherent need and desire for *speed* (cf.

Virilio 1977 [2007]). Aside from the relative computing power each gamer possesses, the biggest factor which affects speed is through network connections. In video games like CS and WoW your network speed is referred to as your 'ping.' As I've stated before, the lower the ping the better the game play.

Gamers often learn of the importance of ping when they host their own server for the first time, an option that players could choose to test the game on their own before joining a public server. When hosting your own server the data between transmissions is locked in the shortest circuit possible, and normally this is *zero* ping. Once your server is created it is automatically listed within the server list and is accessible by all other players unless a password is created. For players' who are able to connect to your server, their ping however, will never be zero. This difference is due to the fundamental properties of distance, speed and material artefacts - which materially intersect to impose limitations on data transmission circuits. For the most part this means that when people connect to your server they can have pings to upwards of 100, representing millisecond gaps between you and your opponent's mental-physical registry and reaction time in game play.

Playing with zero ping compared to 100 or above is an experience that, like mentioned in the case of Australian *WoW* gamers, translates broad infrastructures into the immediate human-machinic feedback event of play. The experience of having zero ping, like the metaphors used by Australian WoW gamers to describe high ping, also feature emotional and tactile adjectives. Players have described the experience of low pings as a feeling of frictionless game akin to the feeling of skating on a freshly iced rink. This frictionless sense of movement also translates into the acts of combat: instead of

stuttering gunfire and jerky movement, each bullet feels like it leaves the barrel of your gun the instant you push down the mouse button and heads towards your enemy along a perfect trajectory.

Tactically, with low ping players also have a wider range of options in what actions they can take in game play, an extra few milliseconds allowed by low ping enables one to pinpoint the crosshair of a sniper gun onto an enemy combatant or permits the flawless execution of a tricky jump that requires perfect timing. In this way, ping not only allows or disallows a range of in game motions and actions; it can also dictate the choices and strategies a player can choose in game play. This element is elaborated below.

While you may have been lucky enough to have a low ping or play on your own server the first time you are connected, it would not take you long to become aware how ping and its effects can shape game play. Much like how one Australian WoW player described the feeling of lagging was akin to "being strangled," lagging in CS can also produce an enraging visceral experience. Your avatar stutters, your gun fires in strange ways and you frequently end up missing your shots. Listening or watching the average public chat discussion in game it would seem that a bad ping, was responsible for half the deaths occurring on the server (the other half being the dreaded cheater/hacker). "Lag!!" was responsible for *Killaz* death after he fired a full clip from his deagle (a powerful handgun) but didn't manage to kill the guy in front of him, who then ended up whipping around and shooting him once in the head. If bad ping was not responsible for the situation described above then it could just as easily have been the culprit when *Jimbo* and his "fucking ping" apparently caused him to 'spray' (fire his automatic gun uncontrollably), missing all of his shots directed towards an enemy, before being blown

up by a grenade. The idea here is that if you take the game at face value then ping is one of the most fundamental elements of play. But how true is this? What is the real difference between playing with a ping of 150 as compared to 50? Is this issue really significant enough to re-map digital sociality as I have claimed?

maybe that guy who yelled at you had it right after all?

In 2003 Armitage conducted a series of experiments to examine the ways in which game design choices influence an individual's decision to connect and play on a given server. Among other things he explored, he looked at the ways in which ping correlated to player performance. In order to carry out his investigation, Armitage set up two nearly identical *Quake* game servers (another very popular FPS at the time), one in Southern California and the other in London, England. The choice of the two cities on two separate continents meant that the servers were approximately 147 milliseconds apart. The two servers were thus set up with identical names and data was collected over a period of 3-months. Over time, the ways in which ping influenced the amount of kills player were able to obtain became quickly apparent, with an almost linear relationship between low ping and high kill (frag) rates (Figure 5). Armitage's study concluded, all things being equal (the computer hardware, broadband speed etc), there was a direct correlation between the number of kills and a player's ping.

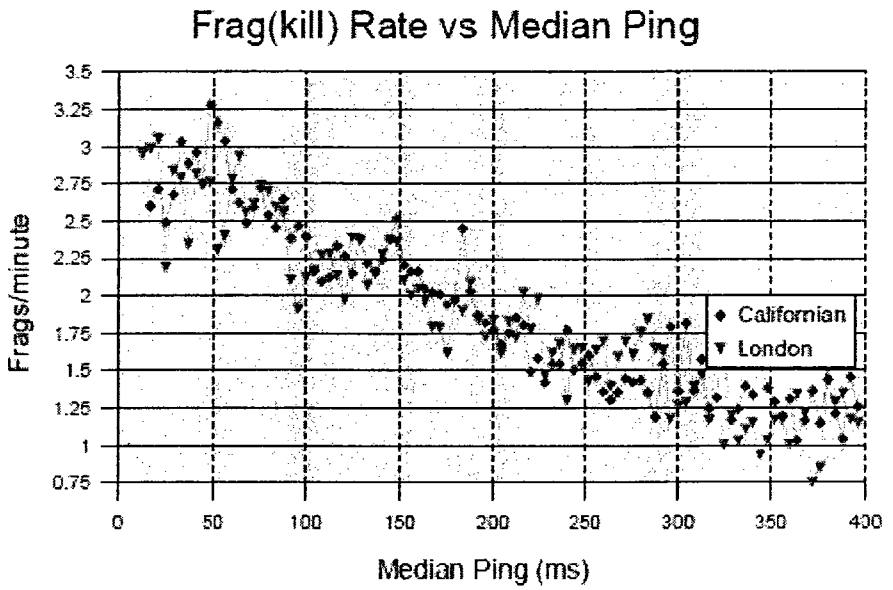

Figure 5: Frag (kill) rate vs. median ping (Armitage 2003)

The difference between playing on a server with 20 ping compared to one with 100 or 300 ping constructs a phenomenally different experience over time. Consequently, finding a particular server where you can have consistently low ping and also play in an enjoyable environment is where many individuals find themselves after playing CS for a while.

Having a poor ping as compared to a good ping is a fundamental factor that can affect different areas of game play ranging from the simple decision of picking the public server you wish to play on to the yearly petitions signed by thousands of Australian WoW gamers demanding the installation of dedicated servers in South East Asia. Ping then can affect small individual actions to coordinated large-scale movements and thus, has and continues to be a crucial factor in networked sociality. But in order to build a complete picture we must delve further. Now that we understand that ping is the factor responsible for influencing many players' early server choice and how ping and its

related consequences of speed and agility within game play is affecting the selective entry into particular social networks – what other infrastructural factors intersect with this emergent sociality?

along the axes of political economic gaming

As mentioned in the case of Australian WoW players, playing on a server outside of your own time zone can be a daunting experience. Armitage's study (2003) linking low ping with high kill (frag) rate was also interested in mapping gamer use over time of day. His results showed strong evidence of the general topographical locality of play. This is demonstrated most clearly in the hours of the day when the servers are at their fullest. The strong correlation between the afternoon/evening of the given server location and the percentage of playing time is quite evident in figure 6.

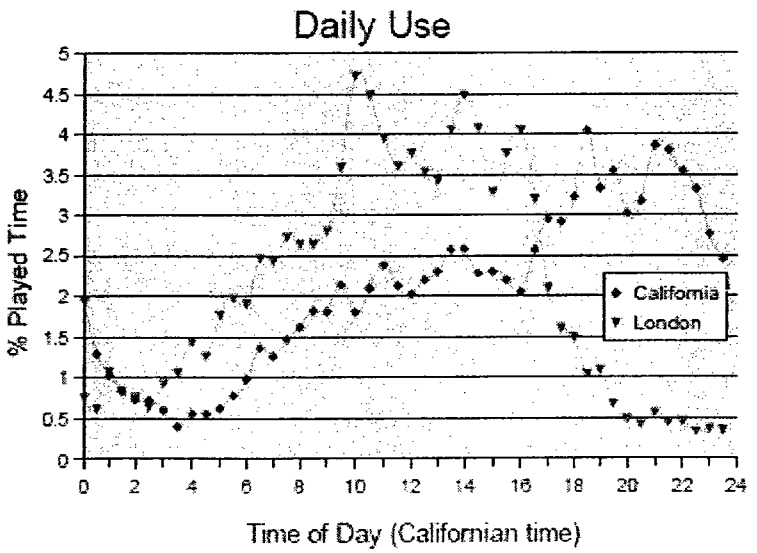

Figure 6: Daily gaming mapped against time of day (Armitage 2003)

While this graph shows a sensible correlation between conventions of daily life and conventions of game, the slightly earlier development in peak gaming times in London

also alerts us to the significant and underlying impact of both macro and micro intersections of gaming infrastructures. While a server may be in North America or Western Europe, there can still be a number of gamers connecting to servers where they do not have a reasonably low ping. What could drive individuals to play on servers where they will be *slowed* down?

The reasons for the disparate connections among geographically distant gamers to a given server highlights a different set of structural issues than the case of Australian WoW gamers. While Australian WoW gamers were forced to connect to American servers on the West Coast due to a mix of geographic (macro) and corporate (micro) infrastructural factors, the occasional necessity of non North American CS gamers to play on an American server, elucidates the impact of the so called digital divide. As a vast amount of literature documenting the digital divide has made clear, Internet and communication technology (ICT's) are and continue to be unequally distributed along political-economic structures, stratifying the urban from the Rural, and global distributions of wealth, dividing the sphere along axes of north and south. However, there still remains a dramatic lack of ethnographic literature examining the ways in which this chasm manifests itself within particular localized technosocial assemblages (see Qiu 2009 for a detailed exception).

In 2002 Feng and Feng (2003) used three popular games to map the location of FPS servers across the globe. As a unique visual aid, they produced a longitudinal map that speaks as much as to where games are popular as it does to the uneven distribution of servers within both major urban centres, national economic contexts, geographic locales and in terms of access, to broadband Internet services (figure 7).

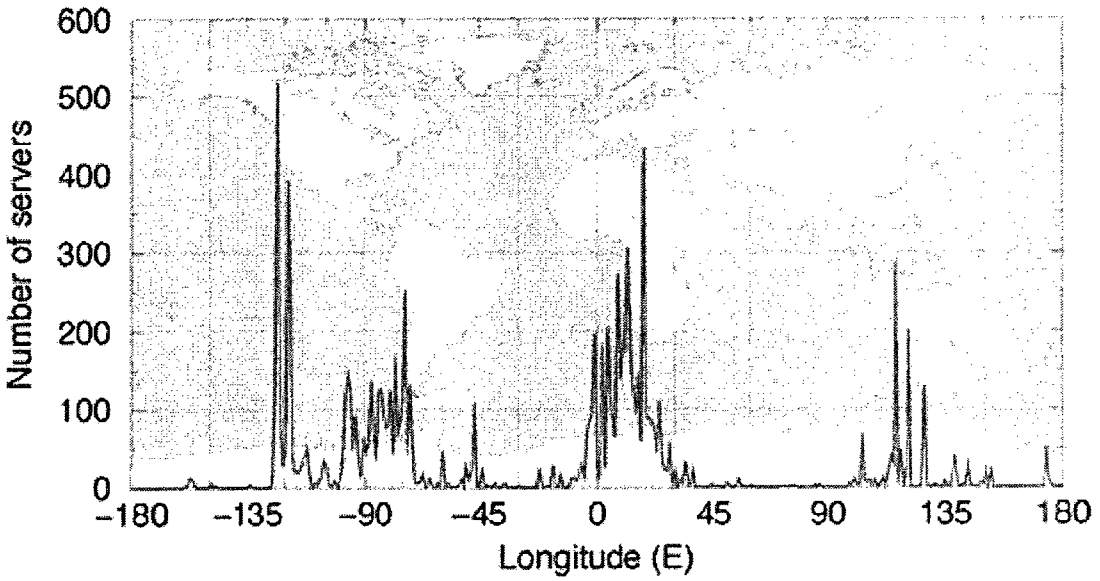

Figure 7: Server distribution longitudinal map (Feng and Feng 2003)

As you can see by the spikes at just below -135 longitudinal degrees as well as left of the -90 longitudinal degrees spike, by far the vast majority of servers sit in the Western United States (mostly in California), nearly none in the Midwest, followed by a growing number of servers spiking along the Eastern Seaboard, Western Europe, and the East Coast of China, Japan, Singapore and a smattering of servers across Australia and New Zealand. At the time of their analysis, North America and Europe accounted for 80-90% of all servers (Feng and Feng 2003: 2). This graph is a clear representation of the uneven geographic development of server placements. This discrepancy exists not only for regions that may be more traditionally associated with low economic and technical development, such as the huge gap observed from approximately +40 to +95 longitudinal degrees representing African countries and Eastern Europe and Southeast Asia, but also demonstrates regional variations in North America in areas such as the Midwest, between approximately -125 to – 100 longitudinal degrees. This map, however, deals with server

distribution at the broadest levels. What may be more informative is examining how well this unequal server distribution correlates with the actual geographical sociality of, for example, North American CS players.

we're gonna go pro

In CS many individuals are members of public clans. These clans are much like the casual raiding guilds in WoW. In these clans, individuals log into the same server each time and find familiar faces. They can discuss a range of topics, joke around, sometimes game against one another and sometimes take part in relatively easygoing matches against other public clans.

In CS, there also exists competitive clans, much like the hardcore raiding guilds in WoW. These clans often spend many hours a week practicing for competitive matches against other teams. Team competitions normally have five gamers on each side. At the start of the match both teams are given the same amount of money and pick either to play as Counter-Terrorists or the Terrorists. In competitive games fifteen rounds are played, thereafter, the teams switch sides. In most leagues or tournaments, whichever team wins sixteen rounds first wins the match.

Competitive team-based CS embodies and is perhaps more subtly influenced by the structural-machinic-human intersections than the examples previously examined. While a low ping is something desirable for individuals playing on pubs, how ping spikes (your ping suddenly going way up) affect game play after a long pubbing session is much different than how a similar spike may affect a player who is competing in a national league. For the competitive player, speed, above all else, is paramount. Ideally then, all players would prefer to be playing in LAN conditions (Feng and Feng 2003: 1). LAN's

are Local Area Networks, much like the ones that are set up in many office environments where the computers are hooked up to a local server for optimum data transfer between machines. LAN-ing gamers often have pings close to 5 ms or less. The desire for LAN gaming conditions and the way in which having equal ping has come to embody a 'fair' game environment has been, over the years, a guiding factor in the creation of major tournaments in physical locations around the world.

Having outlined the desire for low ping among casual gamers to competitive gamers, how can this desire and play be mapped? Taking North America as a geographical area with the highest broadband Internet penetration, well developed infrastructure, relatively low cost access and with few language barriers, it would be feasible to assume and expect that North Americans from Florida to Toronto, New York to Southern California would be part of the same gaming networks. Feng and Feng's (2003) map (figure 7) has, of course, challenged this view. In their map, to live and play in the Midwest, for example, means they are forced to play either on a Californian or East Coast server. While not incorrect in their mapping of the vast majority of servers to areas with significant populations, a map of how ping influences gaming, on the contrary, appears to offer more curious insights (figure 8).

The ways in which the competitive and to an extent public gaming communities in CS in North America have become geo-socially structured has developed in response to a unique set of conditions. Firstly, server nodes have sprung up in the most developed cities. The vast majority of private servers which are available for rental are situated in these large developed cities. If you were to look online for a place to rent your next CS server for private gaming you would find a familiar list of cities: New York, Illinois,

Virginia, Texas, north and south California, Georgia and Colorado. The situatedness of these server nodes within these particular regions acts as a strong force in essentially *bending social space* around their network gravity. This bending of social space around network nodes means that for many people who game FPS games like CS, the shape of their social network is constrained by an upper ping limit, over which most players will opt not to game. To an extent, this is demonstrated by Feng and Feng's map (figure 7), but what their map was missing, of course, was the *range and scope* (Star 1999) of servers (figure 8).

Figure 8: American and Canadian Server Nodes (Matthew Mikusweski, personal communication April 8th, 2010)

What we see with this map, adapted from a late 2009 survey of players based in Seattle, Philadelphia and New York, is the way in which servers have gravity wells that expand outwards, capturing players that may live in regions with no large server clusters of their own. The macro divisions as exemplified by Feng and Feng's map (figure 7), still exist, of course. If you are a player in New York, it is very unlikely that your friends within your network or server home would be based in a city like Los Angeles. In a way, the geographical vastness of the North American continent, combined with server clusters in the regions listed above, have created a different kind of map, one in which roughly divides the continent into West, Central and East. This tripartite model of gaming regions is used by most major gaming leagues to segment teams off so that they can play with comparatively fair pings when competing against one another. This infrastructural division simultaneously rendered the Canadian/American border an arbitrary line on a map. A large proportion of CS teams have nationals from both countries on their rosters. This re-mapping of social space by technology in ways which alter and transform the meaning of geo-political borders has always been a strong influence of technological changes, and in particular, infrastructural developments. Just as railway lines were used to unify a 'nation' such as Canada, modern communications technology has dramatically altered the discursive maps, politically and socially, of contemporary states. Joshua Barker's analysis (2005) of the 1976 launch of the Palapa satellite by the Indonesian government attests to the powerful effects of one such contemporary technology. One of the most dramatic and immediate impacts on the launch was the ability of the Indonesian government, for the first time, to literally visualize the geographically diverse archipelago of Indonesia's thousands of islands. Beyond this, the Palapa satellite allowed the

government not only to metaphorically project a united image, but along with the rapid growth of terrestrial ground stations built for the purpose of receiving transmitted data from this satellite, allowed the government to finally transmit government-sanctioned media broadcasts into the homes of millions of far-flung households. These technologically-mediated broadcasts gave the government the ability to reinforce the dogma of a unified Indonesia. Eventually, however, the same scope and power of the satellite was integrated into the private market, transmitting foreign-created television broadcasting to those same citizens. These broadcasts challenged the monopoly of the state discourse and opened viewers up to other perspectives of imagining themselves and their place in the region and the world.

The infrastructural issues that divide up CS networks in unique ways not only affect the geographical scope of social relationships in North America but also the nature of international gaming. A long standing discussion in the competitive CS scene has been the phenomenal success of European CS teams as compared to North American teams. The world rankings as of January 11th 2009 feature only *one* North American team in the top 10 (Gotfrag 2009). Discussions as to why this is the case have often revolved around the 'style' of 'European versus American' players, referring to the supposed attitudes towards work and practice of gamers from the different regions.

Interviews I have conducted with North American professional gamers have suggested that the importance of ping and the way in which the North American continent is divided up strongly influences international gaming competitions. Crucially, playing in a low ping European CS environment means that gamers from Western Europe, a region geographically small compared to continental North America and with

well developed Internet infrastructure, are all able to play against one another in a cross-border context of low pings, much more similar to LAN gaming in the North American experience. This feature importantly allows players to adapt strategies that fit a low ping environment. This can mean the development of more advanced strategies which rely on exact timing or more simply acts such as positioning oneself in ways that allow for the smallest opening through which to shoot. These strategies are said to translate into both skill and confidence when international teams compete in international venues. In North America, West- and East-based teams are often forced to play on Central servers in order for both teams to have fair pings. However, in Europe all of the best clans across the continent are able to play against one another in any given server. This environment is highly conducive to fostering the development of competitive gamers and their overall high level of team skills.

We have now seen the powerful influence both on local, national and international levels of macro-material infrastructures. But what happens when we look in the opposite direction, beyond these large centers of servers and we peer over the large scale picture into the day-to-day experience of play? Missing from Feng and Feng's (2003) analysis of the disproportionate concentration of server nodes in highly developed coast cities was an acknowledgment of the capacity of CS players, like their Australian counter-parts in WoW, to set up private servers. Furthermore, there are significant micro infrastructural and conventional differences between private CS servers and private WoW servers. While WoW is an MMO optimally designed for thousands of players, CS servers generally hold up to a max of 32 players. Servers of this size are much more dynamic and also cheaper to run than large scale WoW servers. Because of the relative

ease that CS players can start their own servers as well as the fact that they are fully recognized by Valve, the owners of CS, means that private servers have flourished around the world. The power of local servers may be best shown by looking at servers away from the nodal cores explored in my previous map (figure 8).

Let us take, as an example, a server based out of Moncton, New Brunswick. Despite the fact that Moncton is situated away from major server nodes and is a relatively small city (approx. 125,000), a group of individuals have nevertheless set up a local server which has become extremely popular over the past few years. Local servers like this one have proven to be capable alternatives to the larger server nodes situated further away. In local servers, those individuals or, normally, groups of individuals who run them, have full control over the nature of the server. Control in CS servers often means the ability to ban or 'kick' unwanted players from the servers, install modifications that they feel may make the game more fun (sound effects, music, preventing individuals from using certain guns), as well as decide on what maps are going to be played. The importance of this control over the materiality of networks mirrors Barker's (2008) study of interkoms in Indonesia. Interkoms are a kind of "analog communication networks found in various cities and towns in Indonesia (Barker 2008: 128)" where users connect to cables that are strung across villages and households. Once connected to these wires, and with access to a speaker and headset, individuals are then able to publically chat with anyone else who is also connected to the line. In his study, Barker is careful to point out the various material factors that impact the shape and spread of these networks: line overcrowding, repair issues and interference from other lines. Furthermore, Barker emphasizes that only by understanding the materiality and structure of these networks can

we understand how social structures and norms interact to shape the content of these 'public' spheres. One crucial element of these networks, however, compared to larger and often state-regulated ones, is that the users are able, to a large extent, control their shape and content. Private servers, like interkom networks, have a social organization that "takes place not only at the level of discourse but at the level of "materialities of community" (Gumbrecht and Pfeiffer 1994 in Barker 2008: 130). Users are able to literally sever individuals from their cable networks or split off and physically wire new networks if they desire, and have the means to do so. It is this ability to control the physical structure of the network that allow for the emergence and formation of a variety of differently wired networks.

This CS server in Moncton has already set the social context, through technological choices, to 'weed' out a significant amount of players. In the case of this server, these practices are the micro-material infrastructural decisions which exert control over the algorithmic modifications installed on the server. These algorithms include elements like having 'player statistics' mapped every time you connect to the server, meaning that if your statistics do not represent competitive playing standards, you may find it more difficult to interact with other players or 'fool around' inside the game. Furthermore this server also has a significant amount of custom-coded maps, such that if you are only interested in playing the default CS environments you would not play there. These social-material control factors thus excise an undocumented number of players from staying and playing on this server. Mapping the remaining individuals gives us the following (figure 9):

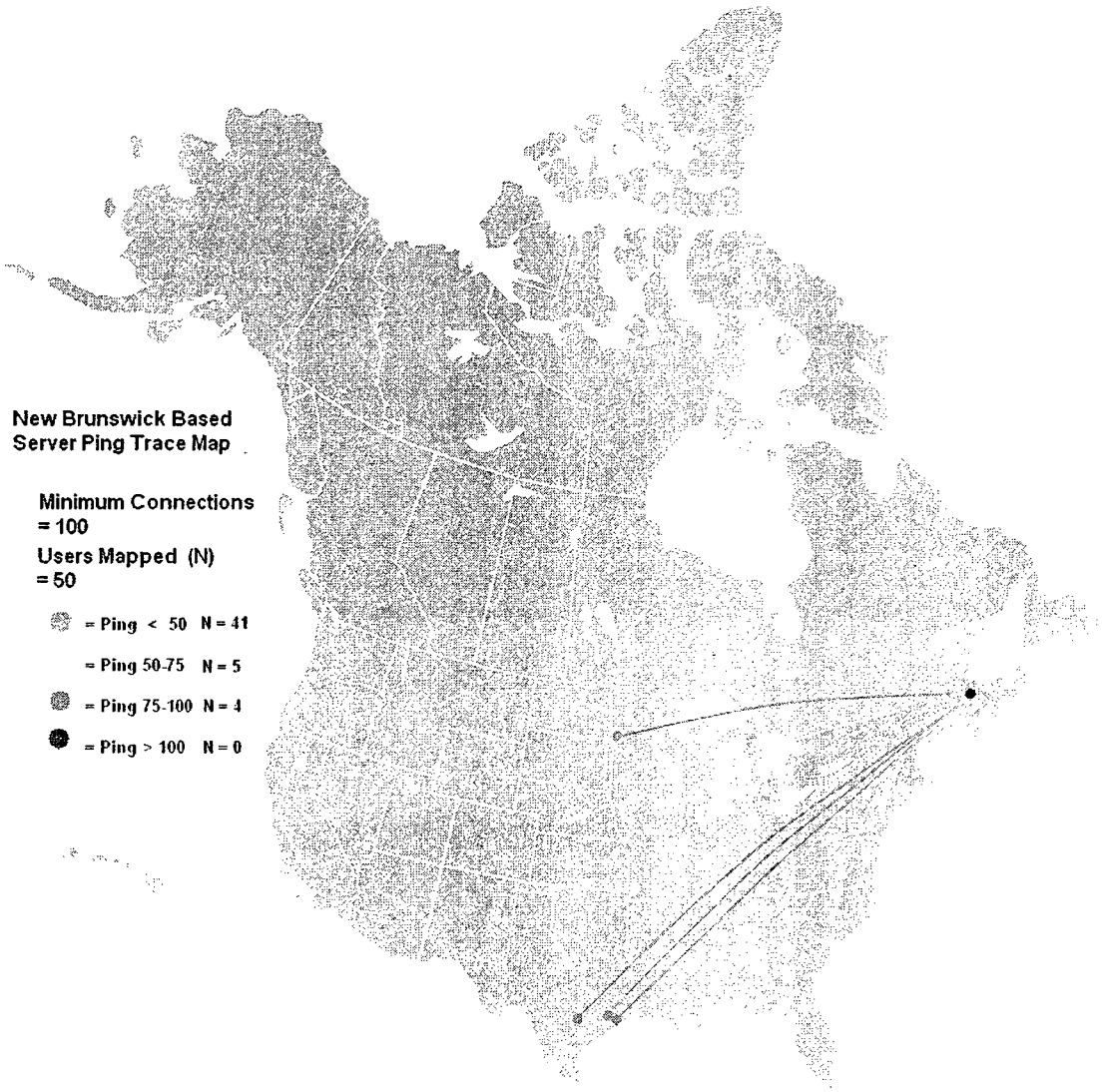

Figure 9: New Brunswick based user trace map (personal data)

As we can see distance remains vitally important. However, while distance is a determining factor, this map also demonstrates the messiness of the conjunctions being described. Sometimes individuals clearly play beyond their 'ping' needs when they find a server they truly enjoy playing on. Those who enjoy playing on a competitive public server with custom maps are willing to play with detrimental pings just to be in the same community as those with whom they wish to play.

An analysis of local servers thus demonstrates both the intrinsic power of macro-material infrastructures but also the ability for individuals with technical knowledge to harness technology and reign in infrastructure to shape their digital sociality in ways that can challenge these structures. Again, these manifestations are facilitated by a developer laxity in CS which is not observed in WoW, which also simultaneously points to the productive and restrictive environments that can dictated by government or corporate polices.

conclusion

By keeping a methodological lens focused on disjuncture across multiple layers – from a single player complaining about his 'lag' all the way up to the frustration at the dominance of European FPS players in the international tournament scene by North American CS players - we are able to draw out a rich tapestry of gaming infrastructures and sociality. In visually representing the findings we are able to see maps of North America being twisted and re-imagined by technology and social convention in ways unseen before.

Just as WoW players must negotiate with particularly situated servers, geographic placements and broadband developments, CS players must build the networks of deep and powerful social connections along a series of infrastructural layers running from the ways in which server information is displayed to the distribution of server nodes along infrastructural-developmental grids. The importance of ping on the structures and culture of gaming should not be understated. Ping translates not only into the first strands of social relationships formed online but also runs through the geography of the entire CS community. The desire to play in a low ping environment on the most basic level means

that for many players, the first social network they form is going to be based on the server that they feel is provides the 'smoothest' play for them. However, while these networks are based on powerful macro-material infrastructural realities, it is also clear that individuals and small groups also have the ability to bend social space in their own ways, attracting different sets of players from far away catchments.

If we are to understand the complex assemblages of online gaming we need a vocabulary that includes gaming infrastructure. By simply studying one element of the infrastructure, ping, already brings about a wealth of pathways, roadblocks and openings that make up the material-human dyads (Taylor 2009) that structure group relations in digital settings. I have thus taken this singular object, ping, and traced it both outwards and inwards, from the first time an individual logs into a game to the dominance of one region over another in global competitions.

If we are to continue evoking the metaphor of assemblages, as it is a fruitful one, it demands that we be alert to both ethnographic details as well as aware of material technologies. The work of this last chapter demonstrates how a focus on one central technosocial object, ping, can serve as the starting point for elucidating a range of diverse experiences of technology. Exploring these material artefacts draws our gaze upward to international gaming tournaments and downward into personal contact with the post-human circuits of interaction between the hands and minds of players, a mouse and thousands of miles of wiring and switches. To study technology means not simply to take an understudied aspect of online gaming and put it into the academic focus. Rather, to study technology is a call for us to connect and understand a major new strand of human interactions and sociality as it emerges.

Conclusion

The ways in which online games are intersecting with individuals and infrastructures is changing human sociality. To understand gaming infrastructure and the ontological characteristics of online games is crucial to both re-imagining contemporary online relations as well as anticipating the set of rapid changes that are occurring as a result of another intersection, that of generational dynamics and contemporary technologies. It is always humbling to remember that for those born anytime before the mid 1980s and who were *privileged enough* to have access to increasingly cheaper ICT's, they are essentially the last generation who will have experienced growing up in a world both without and with the Internet. It is in this sense that as each year passes we are witnessing the slow demographic transition away from what Prensky (2001) describes as generations of digital immigrants to a world of digital natives.

Studying gaming infrastructures helps us to understand generational social change and gains value with the increasing diversification of online gaming networks from PCs and consoles to mobile phones and hand held gaming units. As the major consoles (Xbox 360, Playstation 3 and Nintendo Wii) now all have built online gaming networks, understanding how hardware, coded software and networks interface intersects will provide us with a rich base from which to understand their growing sôcial influences. As software platforms like Steam and those developed for console systems now provide centralized access to multiple online games while maintaining a stable social networking list, users are also increasingly able to build networks within one game and then export their network into different games, and different infrastructural configurations. Each of these networks have unique structural properties that are both similar and different to the

ways in which games like *Counter-Strike* and *World of Warcraft* interface with technosocial assemblages of play.

The idea of a world where individuals are in 'constant connection through the multiplicities of reality' (Choi 2008: 3-4) is no longer an imagined future but is increasingly observed in ethnographic research around the world. Online gaming is simply one area of this process. In this analysis I have tried to follow the strands that lead from complex and well developed webs of social capital described in contemporary ethnographic research of online games toward the wires and cables which serve as the underlying scaffolding of all online social practices. I hope for the work done in this thesis to serve as a theoretical complement to other ethnographic work done on the diversity of relationships developed in online gaming contexts. In this thesis, I have taken my own journey into just a few of the roots that compose the bricolage of global technology. And while Stephenson (1996) focused on the genealogical roots of cabling the world, I have chosen to focus on discrete technical elements of gaming action that, when examined closely, serve as starting points in the discovery of the various elements of complex social-technical assemblages.

I have analyzed the relationship between ping and the development of regionalized gaming in a popular FPS game *Counter-Strike.* I have looked for voices of discontent among Australian *World of Warcraft* players and traced their words to the discovery of a digital diaspora. In the process of analyzing these two games I have developed a methodological tool which I believe to be particularly suited to this sort of study: the ethnography of gaming infrastructure. I hope to have developed this methodology in this paper in order to tease out the coming impact of gaming technologies

as they become an everyday experience for more people. I believe through careful analysis of the 'structures' of play and social relations that contingency will become an increasing force in the social lives of millions of individuals and that contingency, as a basis for interaction, can have significant consequences in developing broader understandings of others.

One important task of anthropology is to make its topics of study relevant for society at large. One of the ways in which this research is relevant and can impact on current thinking is to change the perception of online games. Counter to the general media discourse of games which perpetuates stereotypes of socially awkward or violent adolescents, this ethnographic account, which is sensitive to the everyday experiences of gaming in the context of large infrastructural boundaries, suggests that games are also a means for sociality, judgement-making and intersubjectivity. Perhaps one reason that this dominant discourse has not yet been tempered by challenges from the social sciences is a lack of alternative explanations providing compelling arguments to alter our views of the human-machinic interaction as merely escape or altered reality. My proposed framework, ethnography of gaming infrastructure, offers that very opportunity to engage with a complementary explanation: gaming as an everyday experience.

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